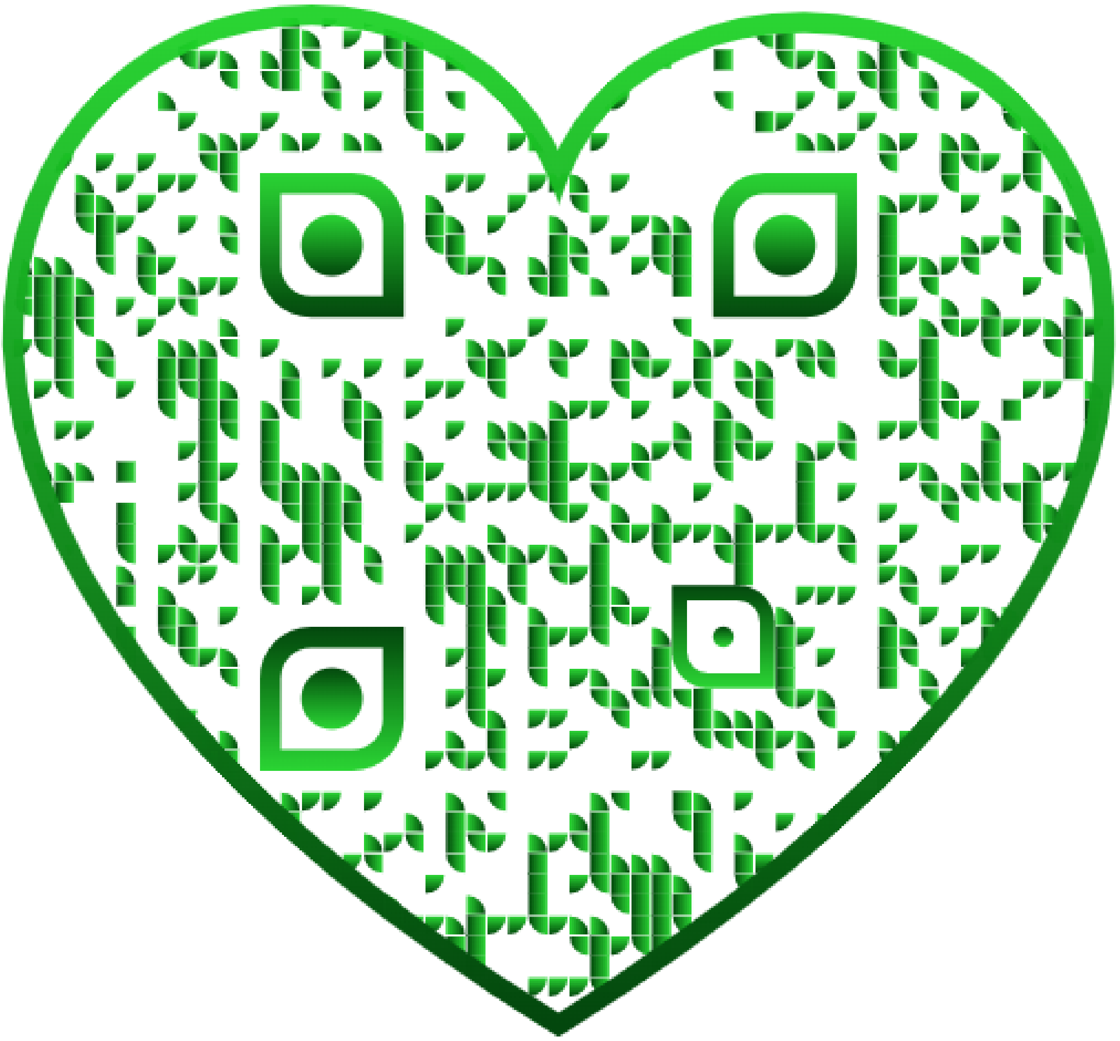
November 2025 The International Publication of the American Society of Cinematographers

American Cinematographer

Ballad of a Small Player

James Friend, ASC, BSC
and Director Edward Berger
Deal a Coup



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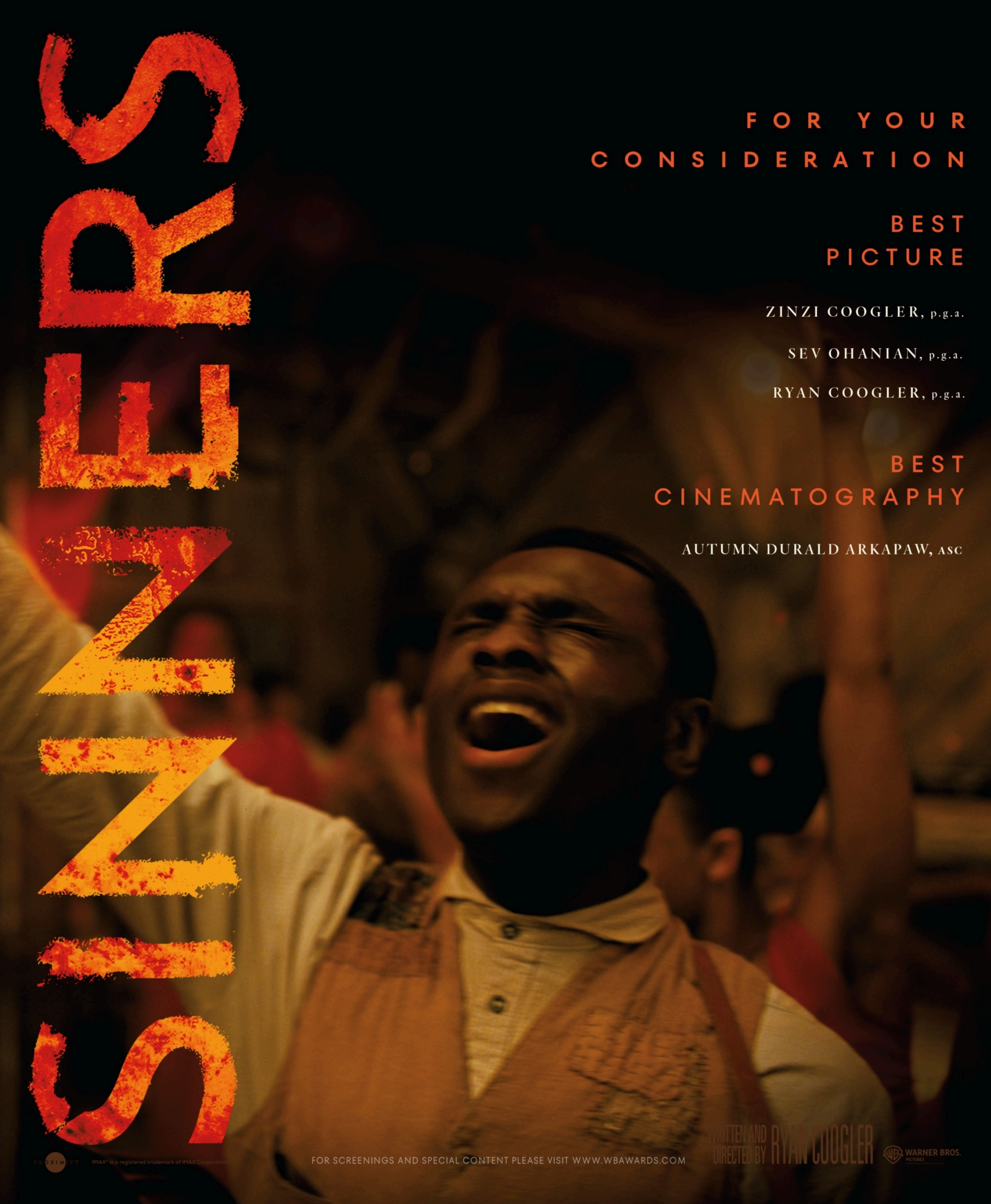

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AUTUMN DURALD ARKAPAW, ASC

WRITTEN AND DIRECTED BY RYAN COOGLER

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American Cinematographer

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High-stakes gambler Lord Doyle (Colin Farrell) peeks at his hand during a tense round of baccarat in *Ballad of a Small Player*, shot by James Friend, ASC, BSC. (Image courtesy of Netflix.)

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President's Desk

PORTRAIT BY RUBY BELL.

Hello, and welcome to the November issue of *American Cinematographer*.

This month's magazine offers an abundance of editorial riches culled from illustrious sources: James Friend, ASC, BSC and Edward Berger give insights into the gambling tale *Ballad of a Small Player*; cinematographer Mike Bauman, camera operator Colin Anderson and 1st AC Sergius Nafa discuss their collaboration with Paul Thomas Anderson on the political thriller *One Battle After Another*; Matthew Libatique, ASC, LPS answers questions about his work on two New York-based features: Darren Aronofksy's crime saga *Caught Stealing* and Spike Lee's kidnapping drama *Highest 2 Lowest*; and Jeff Cronenweth, ASC details his work on the sci-fi feature *Tron: Ares*.

But that's not all! You'll also find a Global Village column about Bianca Cline's cinematography for the period drama *Truth & Treason*, based on the true story of a teenage resistance fighter who opposed the Nazi regime during World War II, and a Virtual World column on the forward-thinking work Roberto Schaefer, ASC, AIC has been doing with Gaussian splats.

Visitors at the ASC often tell us what a joy it is to see the museum-worthy collection of vintage cameras, lenses and accessories we have collected and displayed in our organization's two buildings. This month's issue offers some related, very exciting news in a piece detailing the refurbishing, rehousing and tuning of the ASC Todd-AO lenses, which will be available to rent, initially from Keslow Camera and eventually from other rental houses. ASC member Steve Gainer discovered the vintage lenses in the basement of the Society's Clubhouse, then worked with fellow ASC members Richard Edlund and Shelly Johnson to have them lovingly restored by Zero Optik's Alex Nelson, an ASC associate member, in consultation with Greig Fraser, ASC, ACS.

Greig spent time with Alex in London tuning the lenses to maintain their original qualities and character while also keeping their look consistent so they would work together as a set. Greig noted that during those sessions, he and Alex constantly ran tests on a lens projector that did not show perfect technical results in terms of color cast, and that also revealed slight aberrations and focus not resolving on the edges. Interestingly, however, Greig added that when the lenses were placed on a camera, the resulting images were beautiful in their characteristics and color, especially in how skin tones looked. Achieving that kind of fine balance is very tricky, and the ASC was extremely fortunate to have such skilled artisans on the project.

Amid the advent of digital filmmaking, many of us who work as cinematographers have felt that lenses manufactured during past decades, when most productions were shot on film negative, perform differently when paired with digital cameras. At the same time, many newer lenses made during the digital era have been manufactured with an emphasis on sharpness and "imaging perfection," designed to be clean and consistent in their resolution across the image, with no color cast. There are also fewer options now to use different film stocks and processing. These factors create a challenge when you attempt to create a different look for images shot on a digital sensor. Postproduction work, including digital intermediates and CGI, can aid us in making something unique, but the option of using vintage lenses to produce an organic, native effect has opened up a world of possibilities. Whether it's the color of the coatings, aberrations, flare, or bokeh, these qualities help us to distinctly style our images.

I don't seek a "perfectly perfect" image when I shoot, and I do love all the in-camera hacks we've leaned into across generations, like applying "nose grease on the lens" or using Dior #10 black stockings on the rear element. Cinematographers are always looking for inspiration to make our work engaging and to enhance the storytelling, whether it's referencing still photography, paintings and art installations, or observing how different light and locations can look at certain times of day. In the past, I've found that a still photo by Saul Leiter, a Polaroid by Andrei Tarkovsky, or a painting by Casper David Friedrich can trigger in me an emotion, a feeling of atmosphere, or a sense of place; I've then spent time in prep working out how to translate that feeling into cinematographic images. My interpretation of these inspirations may never be an exact replication of them, but pinpointing the elements that sparked my reaction provides a guiding reference or a place to start. Lenses and camera format are first and foremost for me. How do you add a painterly feel or focus the viewer's eye on a particular spot in the frame? Which aspect ratio enhances that effect? It is all an exploration of visual poetry, expanding across many mediums in the hope of moving the audience.

Best regards,

Mandy Walker
ASC President

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By Sarah Fensom

Helmut Hübener (Ewan Horrocks) stands before the court.

Truth & Treason Explores Acts of Resistance

Cinematographer Bianca Cline and her colleagues were tasked with re-creating early-1940s Germany for Matt Whitaker's feature *Truth & Treason*. "The director wanted to film in Germany, but present-day Germany doesn't look like the [wartime] country — it was nearly bombed to the ground," says Cline.

The filmmakers thus turned to Lithuania — which offered similar architecture that looked and felt accurate to that period of the World War II era — shooting on the streets of Vilnius and building a number of sets in a 200-year-old abandoned music school. "There was a central courtyard, and we were able to custom-build whatever sets we needed right into the building, and we then had real windows with actual views of the exterior," recalls Cline. "Having a real location where there's real scenery outside was huge."

The setting was essential to the film's narrative, which is based on the true story of Helmuth Hübener (Ewan Horrocks), a 16-year-old German who formed a resistance group with his friends Karl (Ferdinand McKay) and Rudi (Daf Thomas) in Nazi Germany during the early 1940s. Using information gleaned from forbidden BBC Radio broadcasts, Hübener wrote anti-Nazi leaflets and the three boys distributed them around Hamburg. They were eventually arrested and tried in Germany's highest court.

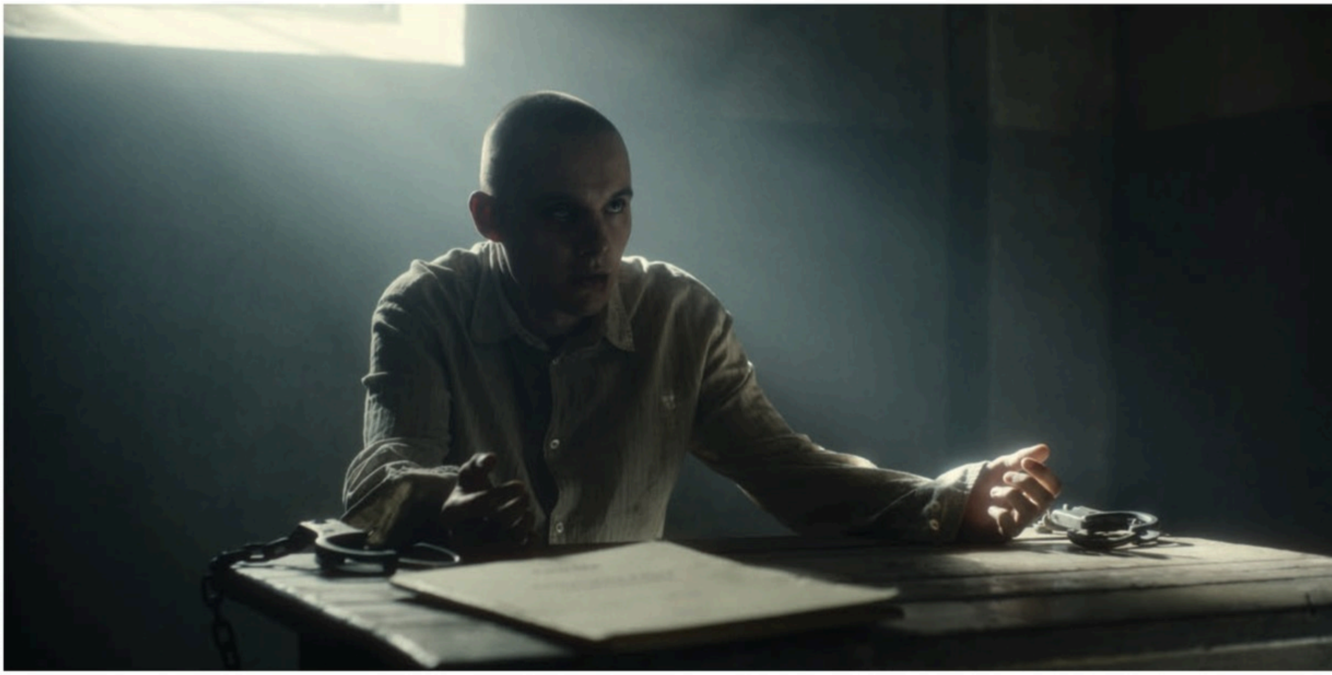
Whitaker had addressed the subject before — in the 2002 documentary *Truth & Conviction*, on which Cline served as a loader while in film school.

Creative Influences

In prep, Bennett Miller's *Capote* (*AC* Oct. '05) and Julian Schnabel's 2007 feature *The Diving Bell and the Butterfly* (*AC* Jan '08) were viewed for reference. The filmmakers also perused vintage autochromes — photos from the early 20th century that used color processing — as well as archival photographs of Hamburg in the 1940s. The latter aided in the design of several sets, including the courtroom where the boys are tried and a prison cell at the end of the film.

Cline also drew inspiration from Soviet photography of the 1940s. "They had strong reds; the greens were kind of muted, and the blues are even more muted. That became my target, because we wanted to have a somewhat muted palette. I did a lot of testing in preproduction with production designer Jurgita Gerdvilaite and costume designer Ruta Lecaite, and then I worked with colorist Natasha Leonnet at Picture Shop to develop a LUT that created the Autochrome look we wanted." Further, because Hübener printed his flyers on bright-red paper, Cline, Gerdvilaite and Lecaite limited the strong reds to just the leaflets and a special book by Thomas Mann, and essentially avoided them elsewhere — per the director's vision — so these reds would "really pop, and signal something emotional," Cline says.

The cinematographer shot *Truth & Treason* with an Arri Alexa Mini LF — adding an additional body for approximately 10 days of the 50-day shoot. "It's been my go-to since it came out because the quality is beautiful. The highlights are very natural, which was great for trying to re-create a 1940s look, where we wanted



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fairly muted highlights."

During testing, she discovered a set of Moviecam prime lenses at Arri Rental's Burbank facility. "Pretty instantly, I was in love. They're built on Olympus stills glass from the 1960s and '70s and were [originally rehoused by the Moviecam company] in the '80s. They came out at a time when everybody was shooting 35mm and wanted a sharper, cleaner lens, and these weren't sharp or clean enough, so they didn't make that many sets, but they were perfect for the look of our film."

The cinematographer also employed an Angénieux 25-250mm HR for a scene in which Hübener throws papers from a rooftop, and used an Arri Macro 200mm for close-ups of the words from a typewriter throughout the film.

Cline says the Moviecam lenses delivered a 1940s look that still felt contemporary. "They covered full frame. They have a really nice falloff, racking focus was very smooth, and the bokeh is really pretty. They also flare easily, which was very nice for me, especially the comatic flares, where it's just coming from the sides and not punchy right down the middle — though we have some of those, too."

In fact, lens flares have a narrative purpose in the film. "As the drama gets more intense and things get less stable, we started to add more flare and to film Helmuth more in silhouette," the cinematographer explains. "We would amplify the flares by putting an optical flat filter in front of the camera, and then we'd put Crisco on a little paintbrush and paint parts of the [flat] where we wanted [the scene] to bloom a little more." Cline employed this strategy — which she refers to as more of a still-photography technique — in several crucial interiors, including the courtroom and the church Hübener and his friends attend.

A Human Scale

As an overall approach, Cline continues, "we wanted the camera to be at a height and filming from locations where a photojournalist would be. We didn't want the camera to be on a crane or outside windows where a stills photographer couldn't actually be if she had been there." Sometimes, Cline would break that rule and occasionally employ a crane, as in an early sequence when Hübener and his friends jump off a bridge into a lake and are seen from above. Cline recalls, "We were on an old, defunct Soviet bridge, and my dolly grip, Marek Korvin-Petrovskij, was like, 'I could put a crane on that [railroad cart].' We didn't really use the [MovieTech Kirin Crane] to do moves, more just to place the camera wherever we wanted easily."

The camera was on a dolly about 60 percent of the time,

Top: "Production designer Jurgita Gerdvilaite built [Hübener's] prison cell on a stage," says cinematographer Bianca Cline. "We surrounded the stage outside the window with Ultrabounce and bounced HMIs into it to create a very soft, ambient daylight, and then added an 18K HMI Fresnel to create the hard light." Above: Cline operated A camera throughout the production.

Top: "The electric crew had permission to put a truss out of a third-story window, and they hung a 4K balloon over the top of this scene," Cline says. "We also used PAR cans to create pools of tungsten light." Above, left: Dolly grip Marek Korvin-Petrovskij and crew placed a MovieTech Kirin Crane on a railroad cart for this scene on a bridge. Above, right: Cline and director Matt Whitaker behind the camera.

Spotlight on Monitoring | Proximity and Communication

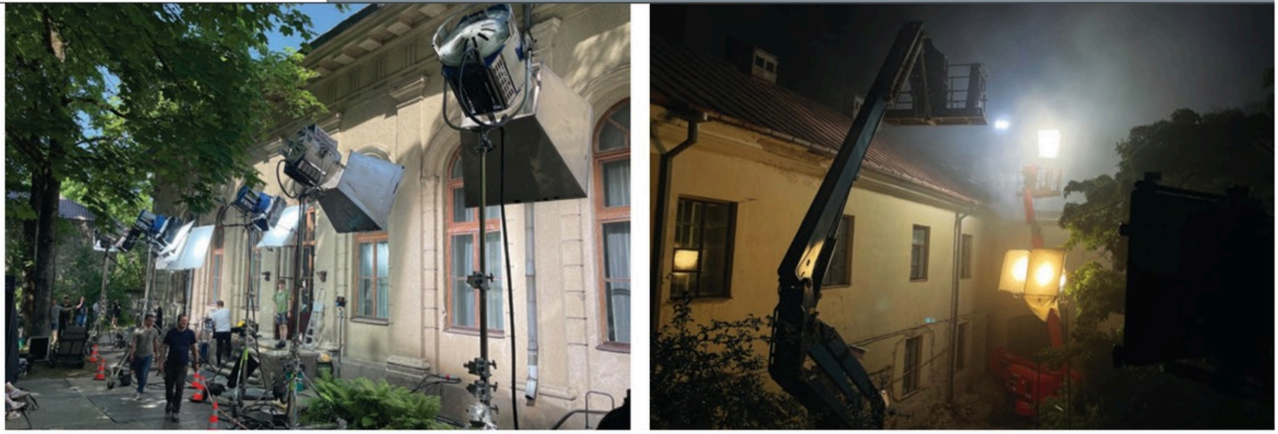
While *Truth & Treason* was mastered at 100 nits for the SDR version, Cline monitored with a Sony OLED BVM-E251 24.5" in HDR. "When we finished the color, we kept the highlights to 125 nits for the HDR version, which I find more pleasing. Anyway, the highlights don't need to be that bright, right?"

Cline usually shared her monitor with Whitaker. "When the director is down for it, I like to have them share my monitor so we can be right next to each other and talk about things more. I like when a director is two feet from the camera; I think it's much better for me and for the actors." When Whitaker couldn't be on Cline's monitor, he used a 7" SmallHD handheld.

"We try to calibrate all the monitors before we start — the DIT's, mine and any others on set," she says. "But when the dailies go up on Frame.io, you do have to be careful, because if everyone ends up watching dailies on their own monitors, or their laptops or phones, they don't always have the same calibration. The ideal is always everyone getting together and watching dailies on a big screen."

— *Sarah Fensom*

Tech Specs: Aspect Ratio | 2:1
Cameras | Arri Alexa Mini LF
Lenses | Arri Rental Moviecam, Angénieux zoom, Arri Macro



Left: This scene in the courthouse (see image, page 10) "was lit using a row of HMIs outside the windows," Cline says. "I love Fresnels for replicating hard sunlight." Right: For two rooftop scenes, "I wanted to create a color contrast with a cooler moonlight and a warm sodium-vapor streetlight. It's very difficult to get lights where you want them in the older section of Vilnius, but we had 40-meter articulating arms that let us get the lamps into the positions we wanted."

but for chase or fight sequences, Cline went handheld. "For chase sequences, we put the camera on the back of a gator. We'd put it on a bungee and try to stabilize it as much as we could. We weren't looking for a stabilized head; we wanted a little bit of movement, but nothing crazy." The cinematographer notes that she operated A camera throughout the production, while Audrius

GET TO KNOW

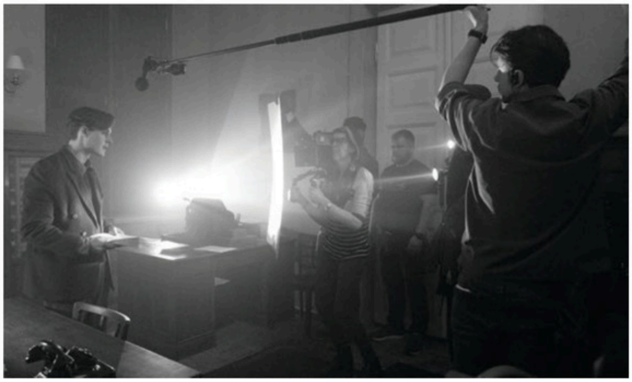
WILLIAM EICHLER
CINEMATOGRAPHER

WHAT IS YOUR LIGHTING PHILOSOPHY?

Will:
"I was raised with the ethos that there is only one light in the world - the sun. It's made me a very natural cinematographer. If I can improve a frame by removing light and simplifying, that's my first instinct. It gives it a more realistic look, to my senses."

ALEC JARNAGIN
CINEMATOGRAPHER

Alec:
"I approach lighting as if it were a character in the scene - like the camera, it's a silent dance partner for the actor, giving them something tonal to interact with. By creating a world through lighting, you're helping the actor immerse themself in their role."



“When the boys print leaflets at night, they don’t want to turn on the lights, so they use flashlights,” says Cline. “The art department brought me a plethora of options for period functioning flaslights, and we tested them in prep to find the best look. We used a light into the ceiling for ambience and a show card to add a little bit of bounce on the actors’ faces.”

Zelenius served as Steadicam operator, with Laura Aliukonyte as 2nd-unit director of photography and B-camera operator. The production’s respective 1st and 2nd ACs were Jurgis Eidikis and Vasily Shramkov.

For a 12-minute courtroom scene near the end of the film, Whitaker wanted a dramatic visual shift that would signify Hübener’s fateful decision. Cline explains, “We started on one side of the room, basically filming into the room away from the windows and doing everything handheld. The moment he makes his decision, the camera dollies from that side of the room around him, filming more on the shadow side and making him look heroic. From that point on, it’s all dolly in order to make him seem more in control.”

Dark Times

The realities of wartime Germany shaped Cline’s lighting strategy. For instance, during nighttime curfews, Germans were told to turn off lights and back away from their windows to help thwart Allied bombing raids. “We had to strike a balance,” Cline says. “We didn’t want to end up with just a blue wash of moonlight during the night scenes, so we took a little bit of liberty. We used streetlights at night, even though they would most likely have been off. We wanted the interiors and exteriors to feel very dim, like the curtains were drawn and there was just a single light source.” For scenes in which Hübener worked at night, for example, practical sources were strategically positioned around him. “I worked closely with the set dressers to get period lamps that gave us the quality of light I was after,” Cline adds. “Tungsten bulbs are hard to find in Europe, but my gaffer, Egidijus Braziunas, had lots of them, and we used tungsten bulbs for all the practicals. If they weren’t bright enough, we would place a Jem ball with a tungsten bulb inside to help amplify the look.

“What Helmuth was doing was very dangerous, and he’s putting everyone he knows in danger,” Cline continues. “There’s a real dilemma there: ‘Do I risk the lives of everyone around me?’ We wanted to amplify that duality, so there’s a lot of sidelighting and halflight on Helmuth.”

For night exteriors, the art department built several period-accurate streetlamps, into which Braziunas placed 1,000-watt tungsten bulbs, allowing Cline and her crew to move around as needed. “The electricians ran cable down the street, and we’d have practicals wherever we wanted,” she says. For day interiors, Cline pushed large sources, typically a row of 18K HMIs, through the windows. “The production designer gave us the option of putting sheers over the windows or curtains, so we could easily black out portions to get more negative,” says Cline. “We would change it up and do different looks.”

A Tense Chase

A particularly narrow alleyway facilitated one of *Truth & Treason*’s most harrowing moments. Hübener, who is being chased by a Gestapo investigator through the streets of Hamburg in the middle of the night, finds a heavy door open, slips through it and takes refuge in an alley. Unscrewing the bulb in the alley’s sole lamp, he waits, panting in the darkness, as the agent runs past the doorway. A few moments later, the agent appears in the entryway, scrutinizing the darkness for signs of the boy.

Cline spotted the location for this sequence while shooting another scene just around the corner in Vilnius. “It’s a real location — you couldn’t put both your elbows up,” she says. “It was really, really skinny. I couldn’t fit Ewan’s face and the camera in there without using a pretty wide lens. I believe we used a 21mm. The lens was really close to him, and we also took the battery off the back of the camera to make everything as small as possible.”

The production added the practical lamp at the end of the alleyway, and Cline and her team built the rest of her lighting around that. “Helmut had just turned off the light, so it should be almost pitch black, but we still needed to be able to see him and see his fear.” She had her crew position “a [Creamsource] Vortex with some diffusion on it. It was only 4 meters away, but fairly soft. Then, we used flags close to the actor to create shadows all around him. We shaped it a bit more in post and took some light off the wall to make it even more realistic.”

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Ballad of a Small Player Envisions a Fever Dream

James Friend, ASC, BSC and director Edward Berger reunite to depict a gambler's dark journey in Macau.

By Carolyn Giardina

Based on Lawrence Osborne's 2014 novel, *Ballad of a Small Player* follows a high roller trying to lie low in the gambling mecca of Macau. Director Edward Berger describes the protagonist, Lord Doyle (Colin Farrell), as "a spiritually empty man in a spiritually empty world that mirrors our world — our present, in a way — as he tries to find a small haven of peace."

Director of photography James Friend, ASC, BSC, an Academy Award winner for Berger's *All Quiet on the Western Front* (*AC* Nov. '22), says the goal on the new film was to immerse the audience "in this bombastic illusion of a fever dream that Lord Doyle is experiencing. It's sort of like going upriver in *Apocalypse Now* to find Colonel Kurtz. What's real? What's not?"

Shooting on location in the dizzying splendor of Macau — a city new to both filmmakers — was both inspiring and daunting. "Everything in

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that city is about seduction — the scale, the opulence and materialism," Friend observes. "We basically threw ourselves into the madness there — the superficial, hallucinatory feel of the place. It was gorgeous to capture, but also very difficult to photograph because we didn't have much control from a technical standpoint, especially in the casinos."

The cinematographer says the "overwhelming" colors of the city,

Opposite: Lord Doyle (Colin Farrell), a high-stakes gambler on the lam in Macau, seeks big scores that will dig him out of his debts. This page, above: A casino manager, Mr. Huang (Jason Tobin), informs Doyle that his credit may soon run dry. Below: The crafty Grandma (Deanie Ip) squares off against Doyle in a game of baccarat as enigmatic casino employee Dao Ming (Fala Chen) observes from the background.

Mirror sequences throughout the film reflect Doyle's increasing stress and declining mental state.

particularly the ubiquity of primary red, motivated his choice of the Arri Alexa 35 as his main camera. Its 4.6K Super 35 sensor "can deal with color, contrast and extreme highlights better than any other sensor I've seen," Friend says. "The color red has historically really challenged digital sensors, and trying to maintain that deep, true primary red was very important to me because it dominates the neon signs and LED lighting in Macau."

A Makeshift Volume

The sheer size of the city's casino interiors presented another challenge. Friend compares the scale to "multiple football pitches almost as far as the eye can see." Because the filmmakers were not permitted to alter lighting or sound on the main floors, they used these locations to film wide shots; mid-wide shots; and, for virtual-production purposes, background plates and elements. Friend used the Red Dragon for some of these plates, citing the camera's "higher resolution and its field of view."

The filmmakers used virtual production to capture many casino interiors that required closer work. They accomplished this in a makeshift LED volume they created in the theater at the MGM Macau resort. The theater featured a stage backed by a large LED screen, but because it was designed for live events, the panels' pixel pitch did not immediately yield photoreal results on camera. Friend found a simple workaround. "The sheer scale of the screen enabled us to place action at a greater distance [from camera] than usual and scale the background plate accordingly to achieve the appropriate resolution," he says."

Berger admits he was initially skeptical of the virtual strategy. "I like having the real place, but in this case, the real place was basically uncontrollable. James did a wonderful job of getting his team and the VFX team to capture the right plates at the right distance or the right focal length with the right lighting, and that LED wall was seamlessly perfect."

Spotlight on Monitoring | Doing Justice to Macau

Friend monitored in HDR with a 27" SmallHD monitor because he "felt like we wouldn't be able to do Macau justice if we were monitoring in SDR." DIT/2nd-unit cinematographer Peter Marsden set up the system, which employed an ACES pipeline. "It was very important to know what was clipping and what wasn't, and which colors were actually rendering," says Friend.

The setup sat on the cinematographer's bespoke cart. "When we're on set, Ed and I don't like to be more than two feet away from each other, so I have a big cart, which I've sort of custom built, that has the monitor and my Swit 24-channel lighting desk on it. I've got this fader desk, and I have all the lights and control wired back to my desk. That way I can adjust everything live and see the results immediately."

Exclusive Spaces

The production was allowed to use private rooms for some casino sequences. One baccarat scene was shot day-for-night on location at the Wynn Palace Macau in the exclusive high-roller suites, a space that wasn't in use at the time. "The suite we used was elaborately furnished and looked incredible," Friend recalls. "We blacked it all out and had our run of the place. I wanted it to feel private and exclusive. I lit it more superficially, more akin to a commercial or a promo. Softly, no hard sources, using [Aputure] 8-by-8 Infinimats with TRP Magic Cloth. There were warm tones, golds, red and oranges in the decoration of the suite, and we leaned into these colors that were already there.

"The environments themselves are so colorful that when you turn lights on, it can actually look a bit overwhelming and sometimes not easy on the eye," he adds. "It was difficult to shoot some of those places because the colors would just go crazy. Where you would want to look at skin tones, you would end up looking at the wallpaper, the carpet or curtains. But with the LUT we were using, colors through the camera appeared more vivid, and this would naturally distract the eye."

Scenes in a private room where Doyle plays baccarat against the fiendish "Grandma" (Jeanie Ip) were shot at another location, which Friend describes as "a totally derelict casino where I think the lights hadn't even been turned on in 10 years." Gaffer Harlon Haveland and his crew replaced countless lightbulbs and even did some rewiring in the building. Friend recalls, "It was full of casino tables, dusty and horrible, so we decided just to rip the whole lot out and start again with just a single, solitary table beneath a chandelier. We put all these filament bulbs in the chandelier so we could control it with a dimmer. When we went in for close-ups, we'd add Infinimats through Magic Cloth and DoPchoice soft egg-crate attachments to shape the light."

In casino interiors he could control, Friend relied mainly on Arri S60-C and S30-C SkyPanels, as well as the Infinimats and soft egg crates. Night-for-day work "would naturally involve an enormous amount of light being pumped into the room, which is great from a certain standpoint because I've got total control," he says. "However, it also comes with a cost, because you need a huge amount of light to light some of these vast spaces for day. But a great thing about the Alexa 35 is the extended sensitivity range; you can shoot at the higher ISO. Utilizing the camera's ES mode [in combination with] the impressive output of the Infinimats enabled me to create the night-for-day look without having to employ a huge amount of HMI."

Private investigator Cynthia Blithe (Tilda Swinton) hunts Doyle, hoping to make him atone for his debts and past misdeeds.

No Escape

To convey the full range of emotions Doyle experiences — and his occasionally altered states of mind — Friend elected to mix anamorphic and spherical glass, including Second Reef Coral 1.5x and Caldwell Chameleon anamorphics, along with Tribe7 Blackwing7 primes. He also tested some Second Reef anamorphic lenses that were in development at the time. "The whole set wasn't released," he recalls. "I think there were only three or four lenses. They had slightly less distortion, so they were more

akin to shooting on spherical.

"Ed and I would talk about the emotion of a scene and where we wanted to put the audience, and we'd basically jump between anamorphic and spherical — less on a technical basis, but more instinctually."

Berger observes, "Camera placement and acting … need each other, and the camera can really make the audience feel what a character feels inside their stomach at any given moment. Every time we decided where to put the camera, it was really driven by what Colin was doing, and part of it [involved] pushing the camera in for close-ups at the right moment and really [giving] the audience no escape. All they see is Colin's face and Colin's breathing."

For close-ups of the character in moments of panic and extreme frustration, Friend used a 12mm Arri/Zeiss Ultra Prime. "As Lord Doyle is going further up the 'Colonel Kurtz river,' we wanted to add real optical distortion," the cinematographer explains. "With that lens, we managed to get very close to him and convey the 'bendiness' of what's going on in his mind."

The many close-ups of playing cards displayed on tables were given special consideration. "The film shows six or seven baccarat games, and we didn't want them all to feel the same, so we needed to find a language that didn't seem lazy and would really serve the story," the cinematographer says.

A Laowa 24mm 2x Macro Probe lens was a key tool in achieving this goal. "When someone's turning over a card or showing a hand and the entire story is pivoting on that moment, you want it to be very impactful," says Friend. "You want to be right in there, like you're literally looking at the hand yourself, peeking underneath a card. That lens enabled us to do that. It's a very unusual, intimate perspective that the audience isn't normally used to seeing on a cinema screen."

One Stop Films in London provided the production with Kilfitt Makro-Kilar 40mm and 90mm lenses, which are more typically used for wildlife photography. "We used those lenses a lot, because when your big payoff is a number on a playing card, you've got to be able to do it justice."

Above: Doyle and Dao Ming connect in the rain.
Below: The gambler pays a visit to her apartment.

A Unique Montage

A sequence depicting Doyle's eventual winning streak, which takes him from one casino to another, also called for a special approach. "Montages are very challenging, because we've all seen them before," Friend says. "While looking at a table, I came up with this idea of wiping from one location to the next by rotating the table. I challenged Guy Bennett, my key grip, to come up with a rig, installed under the table, designed to make the image rotate and pivot like a position of a clock hand. We would do the same shot at the next location, but continuing [the movement] so that the image could rotate in the edit; we would blend each image with the next, and [they] would eventually rotate back around into the next casino.

"It was a type of shot I'd never really seen before, and I thought it would be fun and very fitting within the visual language we were using," he adds.

Happy accidents led to some other evocative shots. "There's one private suite where we were filming at night, and I happened to look over my shoulder and notice this perfect reflection in the window of Lord Doyle winning. I said to my camera team, 'Just give me the B camera for a second,' and I got the shot, which made it into the movie."

Cinematographer James Friend, ASC, BSC (kneeling) works out a shot with director Edward Berger (far right).

"Dehydrated and Desperate"

Scenes of Doyle on a houseboat docked at an island off Hong Kong were filmed with spherical lenses to convey the character's more lucid state of mind there. "We went almost exclusively spherical because I wanted things to feel more real, or how a human being would naturally perceive a scenario," Friend says. "Doyle is weirdly more lucid, but he's still quite disoriented and his character is looking to have a different perspective on life; the houseboat is where he's realizing what's real and what's not. And he has these true fever dreams there."

The filmmakers' overarching goal for the movie, he adds, was to create a visual framework that would "almost look like two different films: one with a very seductive, opulent vibe, and the other that makes you feel as if you've just woken up with an extreme hangover and you don't know exactly what was real the previous day — and you're sort of dehydrated and desperate."

Houseboat scenes were filmed on a set production designer Jonathan Houlding built and affixed to a raft that was then anchored in a bay at Hong Kong's Lamma Island. Friend had to light wider shots from nearby barges. "The houseboat didn't have any power and could only accommodate a few people at a time, so we had to have generators and crew on two support boats," he explains. "We shot extensive day and night scenes on the houseboat, and since we didn't have the resources to light the whole bay, we had to get creative — so, for wides, it was all about timing to have a hint of exposure still left in the sky. I used a lot of high-rated IP fixtures, like Astera AX9s, 5s and 3s, to pepper around the surrounding barges, mainly to give reflective sources in the water. We also rigged Aputure Infinibars above doorways to mimic fluorescent fittings.

"We also relied upon a Rosco FX LED light," he continues. "There is a combination of optical gobos at the right speed of rotation that can simulate a caustic water effect. This was very useful, as it enabled me to be very precise with the position of the light on the building; usually, to get a similar result, I would put lighting barges in the correct position to reflect a hard source into the water, so LED lights were a great replacement.

"As we moved the camera in for closer coverage, I could light the

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houseboat scenes in a much simpler way, using the set itself. Jonathan, Harlon and I designed a small perimeter cover, built into the set, that could take the footprint of a lighting stand."

Another happy accident occurred while a drone was capturing an establishing shot of the bay. "Clouds can just appear there within minutes, and this cloud appeared right where our start frame was going to be," recalls Friend. "I told the drone pilot to go really deep within that cloud, and it went in there to the point where the image just looked white. Then we come through the cloud and down into Lamma Island. It's such a great transition from this kind of whiteout after Doyle has a heart episode. It's a natural reveal, done completely in camera."

Continued on page 24

The previously luckless Doyle hits a hot streak that brings him inconvenient, unwanted fame.

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and Edward Berger for choosing

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Doyle risks ruin during a tense showdown with an old rival, Adrian (Alex Jennings), at the baccarat table.

"We Challenge Each Other"

Berger considered Friend's creativity on *Ballad of a Small Player* so significant that he also gave the cinematographer an associate-producer credit. "His contributions are so vast, so limitless, that he really needed another step of recognition," says the director. "He's such a great storyteller, and we challenge each other; we sit down and really break the film into single shots that will tell the story [and convey] a character's emotional state at any given moment."

Friend was especially inspired by the visual possibilities offered by the courtyard apartment of mysterious casino employee Dao Ming (Fala Chen). "It was located in quite a poverty-stricken place," he says. "We originally had a completely different location in mind, but this spot was so evocative that Ed and I decided to base her apartment there. We must have used about 100 Astera tubes and Infinibars inside the apartment; we installed and programmed them so I could change the color and we could control the exposure. We wanted to show a side of Macau that tourists never see, and that approach gave us this beautiful sort of color palette."

Another favorite location was a grand, scenic temple that serves as the setting for the movie's climax. Friend says the production's approach to this sequence was "a wonderful team effort involving the camera, lighting, production-design and art departments." He remembers that he and Berger were driving up a mountain when they discovered the site. "We looked at it and thought it was absolutely perfect."

The show's special-effects and art departments built a gas-controlled firepit as the temple's centerpiece. For additional lighting, the

Tech Specs: Aspect Ratio | 2.2:1
Cameras | Arri Alexa 35, Red Dragon (plate photography)
Lenses | Second Reef Coral, Caldwell Chameleon, Tribe7 Blackwing7

production-design team created approximately 200 Chinese-made, wirelessly controlled lanterns with 60-watt tungsten bulbs in them. "Backlighting a bit of smoke suddenly made this environment completely come alive," Friend says. "Equipment had to be kept to a minimum, because you could barely get a vehicle up there!"

He also credits the crew for their work on a beach close to Hong Kong. Given the reality of the tides, "it was all handheld flags and handheld battery lights, and a tripod so we could react quickly. Otherwise, two minutes later we would be a foot deep in water! It was a stunning location, and the crew made it possible." ɸ

After experiencing abject despair, the con man seeks a higher path to save his tortured soul.

Revolution and Revenge: *One Battle After Another*

A crack camera team, led by cinematographer Mike Bauman, helps P.T. Anderson bring an ambitious political thriller to the big screen.

By Bill Desowitz

VistaVision is experiencing a renaissance. Following its use on last year's *The Brutalist* (which earned cinematographer Lol Crawley, ASC, BSC an Academy Award for Best Cinematography), the 8-perf 35mm format, with its native aspect ratio of 1.50:1, provides the visual foundation for two major 2025 features: Paul Thomas Anderson's *One Battle After Another* and Yorgos Lanthimos' *Bugonia*.

UNIT STILLS BY MERRICK MORTON, SMPSP. ALL IMAGES COURTESY OF WARNER BROS. PICTURES.

Opposite: Years after his exploits with the "French 75," an underground far-left paramilitary group, Bob Ferguson (Leonardo DiCaprio) finds himself on the run. This page: Bob's daughter, Willa (top left) and her mother, Perfidia Beverly Hills (Teyana Taylor, top right), are hounded by the vengeful Col. Steven J. Lockjaw (Sean Penn, lower right) while Willa's martial-arts instructor, Sensei Sergio St. Carlos (Benicio Del Toro, lower left), tries to help Bob elude capture.

VistaVision seems particularly suited to Anderson's film, an eye-popping political thriller that follows reclusive ex-revolutionary Bob Ferguson (Leonardo DiCaprio) as he embarks on a frantic search for his teenage daughter, Willa (Chase Infiniti), after she's abducted by an old nemesis, Colonel Steven J. Lockjaw (Sean Penn). The film was inspired by Thomas Pynchon's novel *Vineland* and marks cinematographer Michael Bauman's fifth collaboration with Anderson; Bauman served as gaffer on *The Master* (AC Nov. '12) and *Inherent Vice* and as lighting cameraman on *Phantom Thread* before advancing to cinematographer on *Licorice Pizza*, which he co-shot with Anderson.

Bauman says the director has "always been fascinated" with VistaVision, which he tested for *The Master* (shot by Mihai Malaimare Jr., ASC), adding, "*One Battle After Another* provided us with such a big canvas to be able to use it."

The key members of the show's camera crew, comprising Bauman, camera operator Colin Anderson, 1st AC Sergius Nafa, key grip Tana Dubbe and gaffer Justin Dickson — a group Anderson calls "the Five-Headed Monster" — was in unfamiliar territory with the format and conducted extensive experimentation in prep. Bauman recalls that the aesthetic buzzword was "texture," and a key reference was *The French Connection* (shot by Owen Roizman, ASC) for its gritty, grainy imagery. Anderson's directive was, "It's got to look like a '70s movie," says Bauman, and "the looseness of *The French Connection* and *The Last Detail* really set the tone."

Updating the Tech

The filmmakers shot with three vintage Beaumont VistaVision cameras; two came from Geo Film Group, but the primary body was borrowed from actor-turned-cinematographer Giovanni Ribisi (*Strange Darling*; *AC* Oct. '24). Nafa recalls drily, "It was instantly apparent that the cameras would require a serious technical update with regard to peripherals and uniformity. The challenges for me were range, logistics, film runtime duration and Mr. PTA's unabashed proclivity to ask for what my guarded, technical mind had previously considered impossible. However, as I went through the requirements to deliver on these requests, I began to realize that most of the time, they could be furnished."

ASC associate member Dan Sasaki, Panavision's senior vice president of optical engineering and lens strategy, supervised the calibration and upgrading of the cameras. "Our engineering team assisted with the design and fabrication of parts to make the cameras easier to service and maintain," explains ASC associate member Guy McVicker, Panavision's director of technical marketing. "Handheld, studio, stabilized-head and aerial-photography components were all purpose-built, along with general AKS [accessories], as none existed to support what the film needed. We also built a prototype viewfinder for the A body to allow a brighter, sharper image for the operator."

The Panavision team engineered further refinements during

Top: Director Paul Thomas Anderson guides DiCaprio through one of the film's early scenes. Above: Bob moves into position to set off a series of explosions while his group infiltrates a military detention center.

production, including new pressure plates and a new video-assist system. "The crew was able to use all of these upgrades before the film wrapped, and the upgrades yielded better camera systems for [other] filmmakers, ensuring that the VistaVision format will continue to be viable and reliable," McVicker says.

The filmmakers spent more than a year testing Ribisi's camera, which Bauman calls "fixing the plane while flying it." The camera often jammed because the take-up motor had trouble handling 1,000' loads; the solution was cutting them down to 800'. In addition, the crystal-sync motor, which connects to a 144-degree shutter angle, had to be adjusted in order to function reliably.

Another consideration with the Beaumont cameras is that they're very noisy. So, a blimp was built for shooting a few dialogue-heavy scenes with the Beaumont, and the filmmakers sometimes resorted to shooting other dialogue scenes, particularly interiors, in Super 35mm with two Panavision Panaflex Millennium XL2s. These camera systems included latest-generation video assists first introduced on *Twisters.*

A Full Serving of Lenses

Sasaki created a package of 63 spherical lenses, which "resembled a buffet of glass when they were all laid out," says Bauman.

Sasaki explains, "Many of the lenses that were ultimately used had to be modified to clear the VistaVision camera mirror and ground-glass assembly. Paul had used our Super Speed lenses on other projects, including *Phantom Thread*, and he's always loved the look of the movies

Gordon Willis [ASC] shot with them. He wanted that look with VistaVision, but nothing really existed that worked for that format. So, through our conversations, we ended up building a new set of prototype prime lenses, which is now up to 12 focal lengths [from 14mm T2.8 to 100mm T1.8], all of which cover VistaVision. The lenses have a nice flare quality, and skin tones render in a very pleasing way. If you're framing a subject in close-up, the background falls off nicely while more of the subject's face stays in focus.

"In addition to the prototype lens set," Sasaki adds, "we developed a lens that emulates the look of a 'gun scope'; a special 6mm T4 fisheye that covers full frame; and multiple simple compound lenses, such as Tessars, triplets and symmetrical lenses, for close-focus work. Lens development for this show was continuously evolving. Suggestions and requests for additional focal lengths or lens types continued well into production. This was a fun show that constantly kept us on our toes!"

Many of the lenses tended toward the warm side, especially Anderson's personal collection of glass, which he calls the "GW" (named in honor of Willis). That look, Bauman notes, was what the director responded to most strongly. In fact, those color aberrations became a key element of the film's aesthetic. Rather than trying to keep the look consistent, the cinematographer says, "Paul told Kristen Zimmermann, who timed our print dailies, to leave all of the aberrations in."

Finding the Light

One Battle was shot mostly on location in Northern and Southern

Perfidia and Bob share a family moment with baby Willa before a bank robbery goes awry and leads to Perfidia's arrest.

Top: Anderson checks a take on a monitor with DiCaprio and members of the crew, including camera operator Colin Anderson (behind DiCaprio) and cinematographer Michael Bauman (third from right). Above, from left: 2nd AC Rio Zumwalt, PTA, Anderson (at eyepiece) and dolly grip John Mang on location at La Purísima Mission in Lompoc, California.

California and El Paso, Texas. The goal was to maintain a light footprint and extreme mobility so the team could essentially find the light. Their lighting approach mixed color temperatures and often relied on neon and fluorescent tubes for interiors.

Dickson recalls, "The sequence for me that really stands out is when we were filming in Eureka at Bob and Willa's house. It was raining nonstop and the location was very small. I think only PTA, Mike Bauman, the actors and the camera crew could be in the house because it just couldn't fit everyone. We started out by lighting through the windows with Mole Richardson 12-light Maxis and CTB for correction. After just constant downpour, we switched to Creamsource Vortex8s and Nanlux 2400Bs with Fresnels because we knew they'd handle the downpour and give us the stop we needed." Inside the house, the filmmakers deployed a mix of LiteGear LiteMat 4s, Rosco DMG Dash lights and practical sources.

One Battle begins 16 years before the story's "present day" with a rush of adrenaline as Bob, an explosives expert, helps the radical paramilitary group "French 75" storm an Immigrations and Customs Enforcement detention center to spring the detainees. Bob is infatuated with hardcore revolutionary Perfidia Beverly Hills (Teyana Taylor), but their thrilling life of crime gets complicated with the birth of their daughter, Willa.

The sequence was shot on a quickly assembled set near the border wall south of San Diego. In fact, the view from the freeway underpass revealed actual immigrants crossing the border with the production's background actors. "That area was lit primarily with strategically placed practicals," says Bauman. "Flo had created a space that had LED light

Unconventional Methods

By Colin Anderson, as told to Bill Desowitz

Anderson (far left) on location with Bauman, 1st AC Sergius Nafa and a 1200mm Canon.

One Battle After Another is my sixth collaboration with PTA, and one thing I have come to understand and admire is that we very seldom do anything in a standard or conventional way. A good example would be *The Master*, where we initially were only going to do specific scenes in 65mm, with the majority shot in 35mm. Within a week of starting principal photography, PTA fell so in love with the look of the 65mm that we ended up shooting almost the entire film in that format. Those cameras had been sitting unused on the shelves at Panavision for about 20 years — so, naturally, we had tremendous issues during filming to keep them running, but the final result made the effort so worthwhile.

On *One Battle After Another*, PTA decided to use VistaVision cameras that hadn't been used for a full motion picture since the early 1960s. We settled on three bodies, and Giovanni Ribisi's lovingly restored Beaucam became the A camera, with two additional bodies supplied by the Geo Film Group. 1st AC Sergius Nafa spent months at Panavision getting them battle-ready. Even though he performed miracles, we still had issues trying to run the 1,000' mags without them jamming at about 800' because of the load. Looking through the eyepiece was also a challenge for me, because it's mounted on top of the camera with the horizontally mounted magazine under it. As a result, almost every shot that was above knee height required standing on a ladder or a platform on the dolly to be able to look down into the eyepiece.

Steadicam also presented a unique challenge because of the horizontally mounted magazine. As the film runs through the camera, a huge weight redistribution is taking place from right to left, which then has to be counteracted by mounting a traveling weight, synchronized to the motor, that travels left to right, allowing the Steadicam to remain balanced to a certain degree. We had discovered this traveling-weight device years ago when we used it on the short film *Anima* [2019], which was also shot in VistaVision using the Steadicam, and we tracked it down again for this movie. PTA is known for doing extended takes, and a lot of them are on Steadicam, so this became a vital piece of equipment — along with the Volt, which replaces the regular gimbal on the Steadicam and introduces roll stabilization.

It was such a thrill to shoot this film on VistaVision. The last full motion picture shot in this format was *One-Eyed Jacks* [1961, directed by Marlon Brando and shot by Charles Lang, ASC], so being part of this resurrection was a huge privilege. The quality is truly astounding, and although PTA and Mike Bauman introduced a layer of grittiness to the image, the format and quality still allow for a high-quality 70mm blowup.

A few of the many ways this format enhanced the film for me:

There's a scene in which Lockjaw hands Willa over to the bounty hunter Avanti [Eric Schweig] in the desert outside Borrego Springs. The backdrop is a wall of rock stretching from one side of the frame to the other, with their cars bookending either side of the frame. It's an incredibly wide shot, and the actors are extremely small in frame as they walk toward each other and meet in the center. It evokes images from *Lawrence of Arabia* and the classic Westerns we grew up with.

The final three car chases also benefitted hugely from the VistaVision format, as they feature a lot of verticality. The terrain with the steep hills and dips fits into the 1.50:1 aspect ratio in a far more pleasing way than it would in 2.39:1, for example. I was also framing for 1.43:1 Imax and 1.90:1 Imax, so there were a lot of lines on the ground glass to consider!

One operating challenge during the final car chase was trying to anticipate where the road and the cars were as we were traveling. The camera was mounted on an Arm Car equipped with a Padelford Edge Arm system, expertly driven at high speed by the owner of the company, Allan Padelford, who's an industry legend. Every time we came out of a dip and over a hill, I was momentarily unsighted as to where the road or the cars were. I tried to memorize the road and which rise would lead to a slight left or right turn, but I found that to be a huge challenge, to say the least. At times during the pursuit, we also used really long lenses, which meant trying to anticipate a car appearing over a rise that was three or four hills away.

The car mounts we used for the French 75 bank-robbery escape made for an incredibly intense sequence. PTA had mentioned *The French Connection* as a reference, and we hard-mounted a VistaVision camera on the front of a Subaru driven by Allan. We mounted the camera about two feet off the ground, and Allan pursued the picture car at high speed while it was making its escape. By hard-mounting the camera, we achieved a raw, visceral feeling that lends itself to the urgency of the chase. What struck me as different was the old-school, low-tech approach PTA leans toward, as opposed to using a remote head and panning with the picture car wherever it went.

In keeping with this low-tech approach, PTA embraces the use of ride-on cranes like the Titan, which we used on the film, and eschews the modern telescoping cranes and remote heads more commonly used today. He says he prefers an operator to look through the eyepiece. Being old-school myself, I am happy to oblige.

From top: As the pressure mounts, Bob makes a frantic phone call; Bob implores Sergio for support; Willa is cornered by Deandra (Regina Hall), a former member of the French 75.

towers on the perimeter, along with sodium-vapor and metal-halide practicals. Inside the tents and buildings, we had a mix of LED and fluorescent sources. The LED light towers didn't have any way to adjust output, so Justin and Tana made various levels of neutral density that could be applied to lower the intensity. The look we achieved had a really interesting energy and an aesthetic of industrial ugliness: The set decorator, Anthony Carlino, placed silver blankets all over the ground and we kept adding fixtures, mixing the cool feel of the LEDs with these other color temperatures, like sodium vapor.

"Even if the lights were overexposed, we'd shape it in some way," the cinematographer continues. "We did one shot in an area, where the soldiers are walking through the cages and you see the kids inside. I had to do a stop pull from a T1.4 to a T22 in one shot. I'd never done that kind of a pull before! There was a lot of improv going on, so we were constantly adjusting intensities as things were happening."

Respecting the Improv

The filmmakers also responded to extensive improvisation between DiCaprio and Benicio del Toro, who plays Sensei Sergio St. Carlos, a martial-arts instructor who shelters immigrants. Bauman recalls that Anderson would block out the space and let the actors play, which led to a number of happy accidents. "They would start just riffing on something, and that looseness defined so much of our approach, in terms of how we lit and grabbed those moments," Bauman explains.

One scene in El Paso — when Bob rushes into Sergio's dojo asking for assistance — was reshot for additional lighting. The sequence was initially lit with fluorescent tubes. "We never rehearsed that the lights were going to shut off and they were going to stand in silhouette," says Bauman, "but we happened to have a condor a block away, carrying four Vortex 8s and three Fuze Max Profiles, and we could get just enough height so we could shoot the light from the condor into the room without really seeing it. The overall ambient level in the room was very high because we couldn't dim the fluorescent lights, so we were adapting to that. When that interior light level dropped, we still had the edge from the condor."

Another set where the filmmakers adjusted on the fly was Sergio's apartment. Production designer Florencia Martin and crew created a multi-room apartment complex that we were able to move through fluidly," says Bauman, noting that the build included a second floor so the actors could go upstairs, come downstairs, and be outside. During a key scene on that set, DiCaprio was performing his character's side of a phone call when the actor spontaneously pulled on the curtains, causing them to fall down and expose the street beyond and below the windows. "Leo just played with it, and it was like, 'Okay, the light is this way now,'" says Bauman. "Justin added a projection on the wall using a Fiilex Q8. It was about having messiness and embracing light that wasn't sculpted. We had to respect the improv, so we had a lot of small sources on set that we could hide quickly."

Hot Pursuits

The film's car chases provided their own challenges for shooting in VistaVision. They include a bank-robbery getaway filmed in Sacramento; a chase involving Bob and Sergio, staged in El Paso; and a bravura chase with Willa taking charge in Borrego Springs, San Diego, known as the Texas Dip. Nafa recalls, "The magic-hour chase sequence in the rolling hills of Borrego Springs required some quick reloads and tactical positioning of support to accommodate a run that was miles long. The

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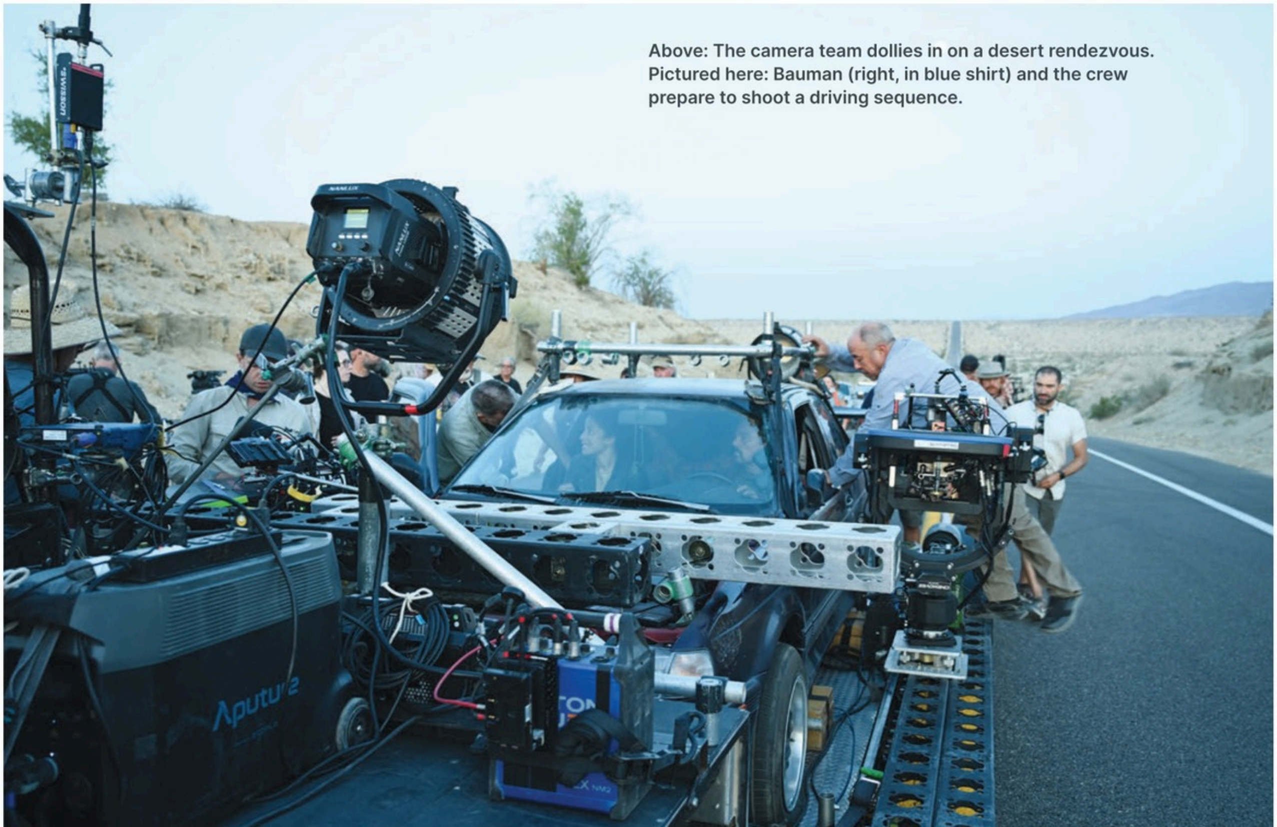
cunning genius and piercing wit of [the late] 1st AD Adam Somner in these pressure situations helped me execute to the level necessary to thread multiple [VistaVision] cameras at different check points — and keep the *images* from eluding capture! I think the gravity of the scene itself will properly convey what I was feeling at the time, and that [the sequence] will certainly stand out for the audience."

Some of the film's car-chase footage was shot with a biscuit car driven by Robert Nagle, but in Borrego Springs, the filmmakers used an arm car equipped with an Allan Padelford Edge Crane System, driven by Padelford himself. "That stretch of hills was really great when we were shooting wide-angle," notes Bauman. "We also had another car with an 'elevator rig' that could raise the camera up and down and get very low to the ground; it could be down right behind the car, and the operator could bring it up, go over the top of the car and come down again." Referring to a previous gaffing job, he notes, "We also used that on *Ford v Ferrari* [shot by Phedon Papamichael, ASC, GSC; *AC* Dec. '19].

Bauman adds, "The challenge was the reliability of the VistaVision cameras. You're banging those things around, and there would be times when they would jam and you'd have to do it again. And there would be times when you didn't know how much you'd gotten before the camera jammed. But we set up our cameras and ran them out there, constantly changing the exposure as the sun was getting lower. It was all about embracing the raw energy of the moment, and that included embracing the sun bouncing around and directly hitting faces."

Above: The camera team dollies in on a desert rendezvous. Pictured here: Bauman (right, in blue shirt) and the crew prepare to shoot a driving sequence.



Tech Specs: Aspect Ratios | 1.50:1 (VistaVision), 1.43:1 (Imax 70mm), 1.90:1 (digital Imax), 2.20:1 (Standard 70mm), 1.85:1 (pillarboxed within 2.20:1 frame)
Format | 8-perf 35mm
Cameras | Beaumont VistaVision, Panavision Millennium XL2
Lenses | Panavision Super Speed, Ultra Speed, Primo, PVintage, prototype VistaVision primes, Standard Speed, Ultra Speed Telephoto, System 65, 65 Vintage, Primo Zoom, VA Zoom; Zeiss Jena Biometar; Pathe Goerz; Heliar; Nikon Telephoto; Canon Telephoto
Film Stocks | Kodak Vision3 500T 5219, 250D 5207, 200T 5213, 50D 5203

One of the car sequences required a distorted close-up of a shotgun blast, but balancing the exposure proved very difficult. "We had to hide some lights inside the car," Bauman explains. "The interior was just insanely bright because the ambient light outside was so hot. We thought we might have to use windows in post to help balance those shots, but Justin was able to put a diffused Vortex4 on the floor of the car's passenger side, and we developed ratios to help strike a balance between the interior, the actors' faces and the exterior."

"31 Flavors"

In select urban markets, *One Battle* is being exhibited in 70mm Imax and in VistaVision, with updated 8-perf horizontal film projectors facilitating the latter format. This was Anderson's plan from the beginning. During prep, Warner Bros. provided a VistaVision projector so the filmmakers could screen a reel of *North by Northwest* in the format, and the production took the projector along to screen VistaVision dailies on set.

Bauman notes that watching print dailies is an essential aspect of every film with Anderson. "The rigging grips worked with postproduction to create a mobile projection booth that had two Super 35 projectors and the VistaVision projector. Usually at the crew hotel, a conference space was converted into a screening room so we could view print dailies at the end of every shooting day. Fotokem did all of our dailies and processing.

"We shot almost a million-and-a-half feet of film," Bauman adds. "We shot with all four of Kodak's Vision3 stocks, but predominantly with 5219. We would push a stop but rate the stock at 640 or 800, and a 2-stop push would be rated at 1,600. We also pushed 5203 and 5207.

"It was a lot of fun, but it was hard — just a lot of extreme conditions. But with Paul, you're always pushing yourself. It's just a huge level of kinetic energy. We'd shoot till absolutely last light to try and get anything in the sky we could, just to get some sort of silhouette, some sort of detail, even if we were pushing 1 or 2 stops. But I think this is going to be an event film. With all these different formats, it'll be like 31 flavors." ⌽

Top: Sergio sacrifices himself for the cause.
Above: Bob confronts a potentially deadly situation on a desert highway.

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FEAR

New York, New York: *Caught Stealing* and *Highest 2 Lowest*

Matthew Libatique, ASC, LPS shoots a pair of features set in the City That Never Sleeps.

By Iain Marcks

Two New York movies, the crime dramas *Caught Stealing* and *Highest 2 Lowest*, recently reunited cinematographer Matthew Libatique, ASC, LPS with longtime collaborators Darren Aronofsky and Spike Lee, respectively.

Libatique and Aronofsky were classmates at the American Film Institute in the 1990s and have since made eight features together, including *Requiem for a Dream* (*AC* Oct. '00) and *Black Swan* (*AC* Dec. '10). Libatique says he's learned "almost everything" about filmmaking from Aronofsky. "A lot of my style comes from working with him, by virtue of how long we've known each other."

HIGHEST 2 LOWEST: UNIT STILLS BY DAVID LEE; ALL IMAGES COURTESY OF A24.
CAUGHT STEALING: UNIT STILLS BY NIKO TAVERNISE; ALL IMAGES COURTESY OF SONY PICTURES.

Opposite, left: Wealthy music mogul David King (Denzel Washington) is targeted for a ransom plot in *Highest 2 Lowest*. Opposite, right: Luckless bartender Hank Thompson (Austin Butler) befriends a nefarious neighbor's cat in *Caught Stealing*. This page: Cinematographer Matthew Libatique, ASC, LPS (right) on location with 1st AC Aurelia Winborn during production of *Caught Stealing*.

Aronofsky adds, "Working with Matty on *Caught Stealing* was, as always, a complete thrill, but this one was especially so because it was a return to the old neighborhood, the neighborhood of our youth, the neighborhood of our memories. It was exciting to re-create our old haunts and to share nostalgic stories with each other of all the different adventures we had back in the days when we were making *Pi* and *Requiem for a Dream* on those same streets. It was interesting to look at old films, some of them ours, to help us remember how much things have actually changed. I thought Matty's work [on *Caught Stealing*] was perfect in summoning the smells and mood and grit that so mark late '90s New York."

Lee came calling for Libatique in 2004 for *She Hate Me*. Their work together so far encompasses several more features, including *Inside Man* (*AC* April '06) and *Miracle at St. Anna*, as well as commercials and live events. "Spike is completely freewheeling," Libatique observes. "Sometimes he'll write five shots on a napkin and be like, 'This is what we're doing today.' The next day, it's a big oner. He has a language all his own."

Lee quips, "Matty is my brother, even though he's a Mets fan. He's a true artist, and he will do whatever it takes to get the job done, to help the film, the story, the actors, the directors. He's all game."

Set in the late 1990s, *Caught Stealing* follows a hapless bartender, Hank (Austin Butler), as he's inadvertently drawn into his neighbor's criminal entanglements, which include a stash of $4 million that has two organized crime rings hot on his tail.

In *Highest 2 Lowest*, inspired by Akira Kurosawa's 1963 film *High and Low*, the kidnapping of a teenaged boy, mistakenly believed to be the son of a powerful music mogul (Denzel Washington), forces the industry kingpin to confront what it truly means to be a "success."

Libatique recently spoke with *AC* about both films.

American Cinematographer: Which film did you start first?

Matthew Libatique, ASC, LPS: I started prepping *Highest 2 Lowest* in November 2023 and we shot in January 2024, until the spring. *Caught Stealing* started soon after that, prepping in June or July and shooting from mid-August until about December.

Tell us about your format and camera considerations on both films.

On *Highest 2 Lowest*, the camera was an Arri Alexa Mini LF, and we shot with Atlas Mercury 1.5x anamorphic lenses in combination with modified Canon rangefinder lenses that TCS calls Canon Dreams. Then we had the Canon K-35s, which are beautiful. They flare perfectly, but there aren't a lot of focal lengths. We also shot 16mm.

On *Caught Stealing* we used a Sony Venice 2 and the DJI Ronin 4D-8K. We had two sets of Zero Optik's Bausch & Lomb Ultra Baltars for the Venice 2, and I used them in combination with Sony G Master primes on the 4D. We also had a DJI Inspire 4. We used [a heavy-lifter drone] with a Venice 2 for one shot at the beginning of the film, where it brings the camera over to Hank's bar for the first time, but most of the drone shots in *Caught Stealing* were done with the Inspire.

What was Darren's vision for the film?

It came from our memories. We started making films together in the '90s, a little before the time period depicted in *Caught Stealing*. When Darren and I were scouting around New York, there was a lot of, 'Remember this? Remember that?' because we've been working together since *Pi* [*AC* April '98]. Making a film about that era gave us license to

Pictured here: Hank slinks out of sight as a Russian gangster (Nikita Kukushkin) closes in. Below: King begins a tense subway ride as he attempts to pay off a kidnapper.

reminisce. If you look at the East Village or the Lower East Side, things look pretty much the same. There are bike lanes, and every so often there's a modern gym or a wine bar you have to avoid, but generally speaking, the architecture is very similar. We were geeked up about revisiting classic joints like Cherry Tavern and Benny's Burritos — and putting a sign for Kim's Video back on the storefront where it used to be! Basically, Darren's goal was to make sure we were highlighting parts of the city that meant a lot to him during that period, like Chinatown in Manhattan, Flushing Meadows, Brighton Beach and the East Village.

We knew we were going to have to move very fast. Most of Darren's films are very subjective and dictate the language, so we often do minimal coverage with POVs and clean singles on our protagonists and over-the-shoulders, but this was 180 degrees from that. This was, 'Okay, we have a lot of characters to accommodate.'

What I love about the Venice 2 is the ability to make adjustments while we're still rolling; I don't have to cut to change the internal NDs, which means a lot to a guy like Darren, who hates to cut. DJI was nice enough to send me the 4D-8K in prep, and I was just walking around

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Spike Lee on Love, Trust and Artistry

The director on the key qualities he seeks in his collaborators.

***American Cinematographer*: What do you look for in a cinematographer?**

Spike Lee: How they tell their stories.

I assume you mean in cinematic terms, such as camera moves and compositions?

It's all that stuff, everything that a cinematographer has in his or her toolbox. You know, it's not a painting — these images are moving, bringing written words to life.

You're a very visual person yourself. A Spike Lee joint has its own distinctive style.

That's not me alone. I get a lot of help from the DPs I choose to work with. I'm not gonna hire anybody that's not bringing something to the table.

What does Matty bring to the table?

Matty is my brother, even though he's a Mets fan. [*Laughs*.] He's an artist, he cares deeply about the work he does, and he will do whatever it takes to get the job done. He's all game.

One of the things he told me about making a film with you is that he can trust you even when he doesn't know what you're up to in the moment.

That's because I'd be thinking of something at the last minute!

But you've been making films for so long that it's like second nature to you, and I think what Matty's saying is that he trusts your instincts.

It's mutual. The love and trust I have for Matty is the same that I have for Denzel. We all know what we're doing is best for the film. You can't build a skyscraper or a brownstone if the foundation is shaky, so once the foundation is set — the foundation being love and trust — you can do anything.

One of the standout sequences in *Highest 2 Lowest* is the ransom-drop sequence.

That is an exciting scene. David King, he's got 17.5 million in Swiss francs in a black backpack. He's on the 4 train from Borough Hall going all the way up to Yankee Stadium. Now there's the hated Boston Red Sox fans! Now we're in the Bronx, and we've got the Puerto Rican Day Parade. It's chaos! How do we tap that excitement? We saw what the late, great Bill Friedkin had done with [the car chase in] *The French Connection*. It's like that, and Dean Winters, playing the cop, he's like Gene Hackman in the car, chasing the train uptown. We had storyboards, and we talked about it, but the scene determines how you shoot it.

Whose idea was it to shoot the train and parade sequence with multiple formats?

That was Matty. Those 35mm cameras are no joke, and we wanted more flexibility with the cameras and also with the technology. We weren't worried about blowing the 16mm up to 35mm.

There's some Super 8 footage in the film as well, for the King family memories, which seems like a very "Spike" thing to do — not because it's practical, but because it's emotional.

We use it *spiritually*, and it should have that effect when you see it.

— Iain Marcks

Lee confers with Washington on set.

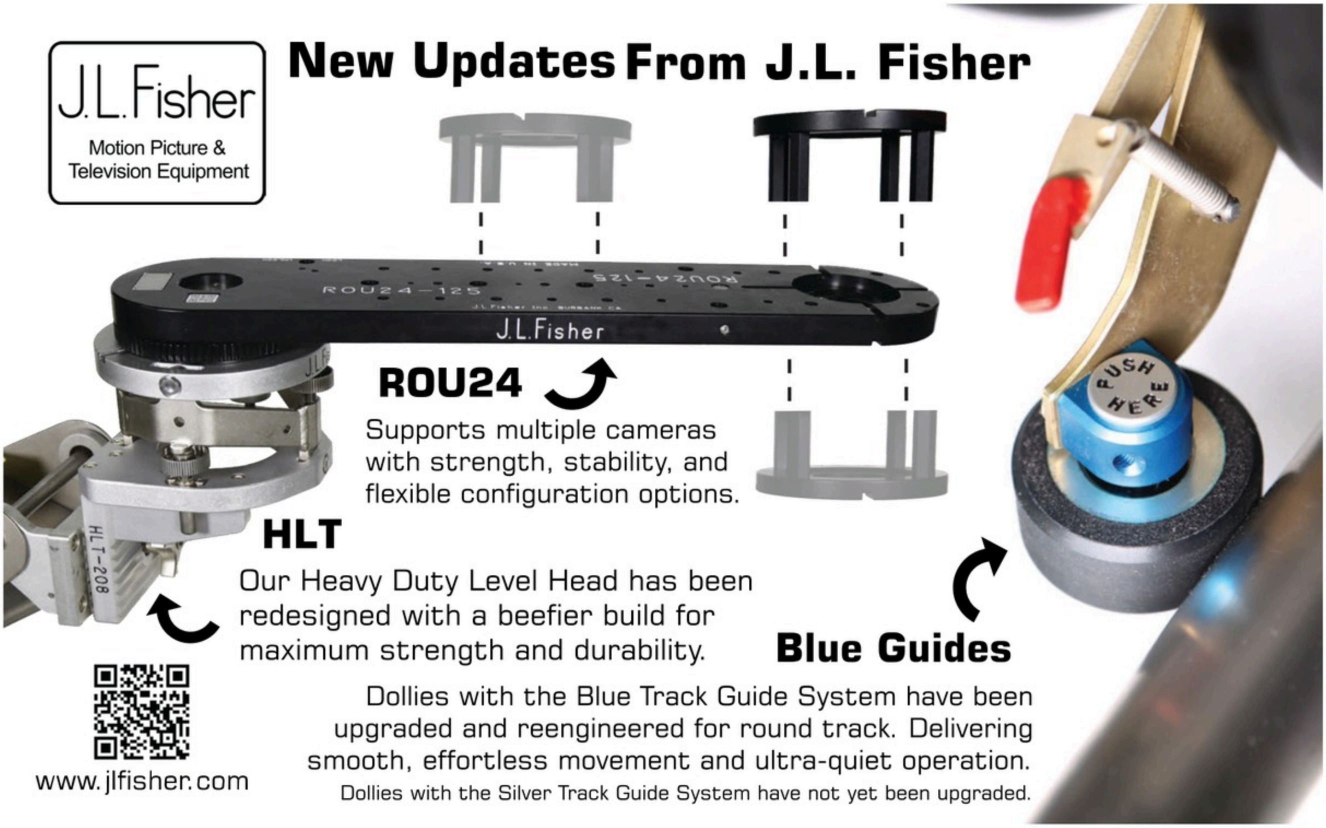
Left: King has a word with his son, Trey (Aubrey Joseph), after dropping him off at basketball practice with his friend Kyle (Elijah Wright, far right) as their coach, former Celtics and Lakers player Rick Fox (playing himself), listens.
Right: Disgruntled rapper Yung Felon (A$AP Rocky) hatches a scheme to kidnap King's son but grabs the wrong boy.

the production office to see what the thing could do. Working with DIT Jeff Flohr, we were able to build a LUT for it that mimicked the Venice 2. We used the 4D when we had to move the camera quickly through small spaces on location.

In prep, Darren and I watched and talked a lot about older films, specifically Sidney Lumet's *The Verdict* and *Dog Day Afternoon*, because Darren was interested in Lumet's coverage schemes. And also, we were totally influenced by Martin Scorsese's *After Hours*.

Did you do extensive camera-blocking rehearsals like you did for *Mother!* and *The Whale*?

There were so many characters that we didn't really get the chance. The only people I got to watch first were Austin Butler and [co-star] Zoë Kravitz, because Darren had the most time with them. Austin was here in New York, so I was able to get some time with him and Darren at the beginning. By the time Liev Schreiber and Vincent D'Onofrio were cast [as Hasidic hitmen], I was in tech scouts and prepping gear at TCS.



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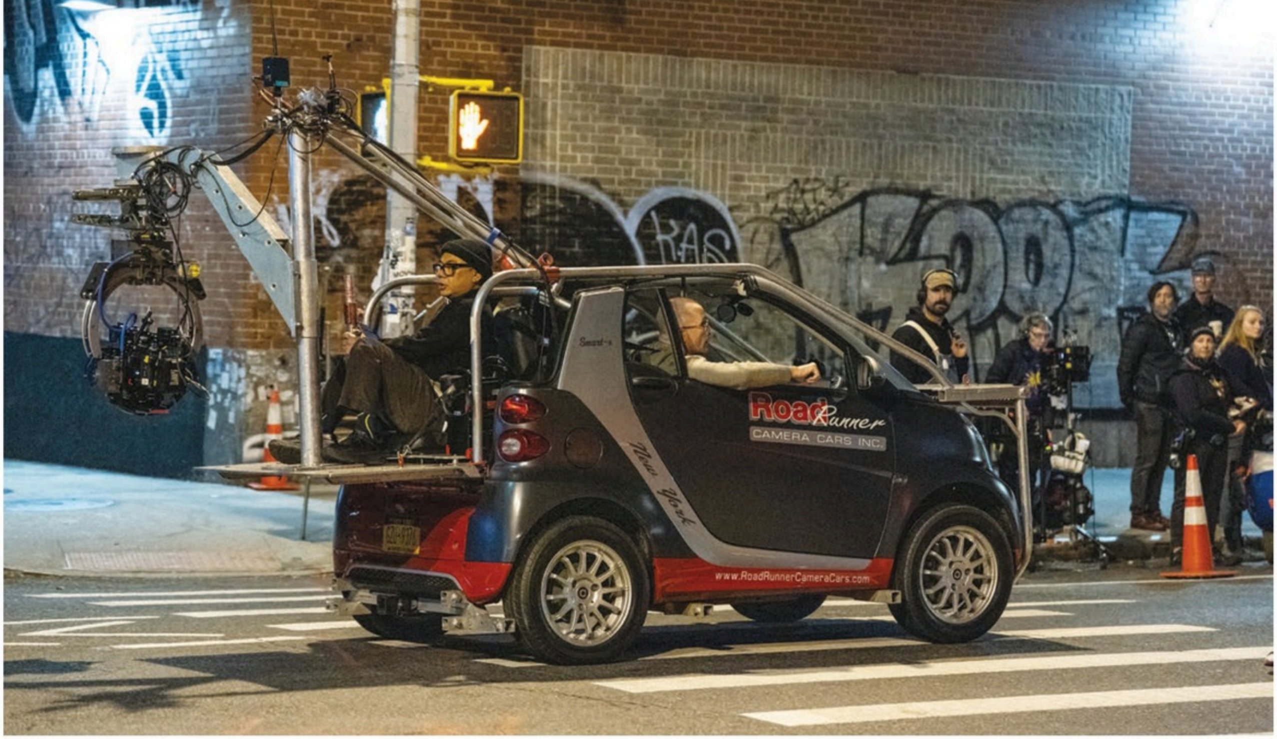

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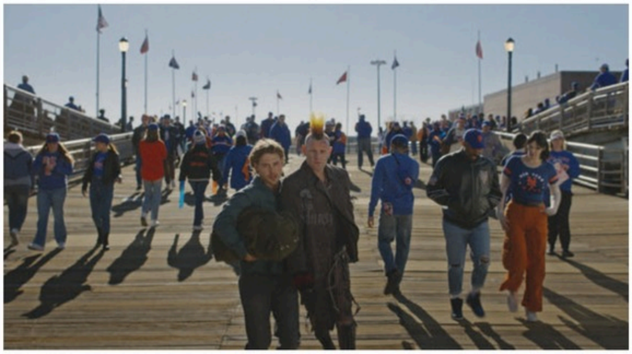


From top: Libatique and director Darren Aronofsky work from a Road Runner camera car while shooting *Caught Stealing*; former college-baseball star Hank impresses onlookers with his batting-cage prowess; Hank hauls his criminally inclined neighbor, Russ (Matt Smith), along a boardwalk in the New York borough of Queens.

What role does the geography and architecture of New York City play in your creative process?

Our approach changes based on the location and what we're doing. Chinatown is going to look like Chinatown; I'm not going to make it look *more* like Chinatown. Texture was definitely something that was in my mind, and something Darren and I are always interested in. He'll often ask me at the beginning of a project, 'What's the look of the movie going to be?' and I always B.S. my way through an answer because I don't know yet!

We definitely had a plan, but, for instance, I often used the ColorCon from Camtec, a flashing device that you put in a filter tray in front of the camera to add color to the shadows — and there's a scene where Hank's in Chinatown and goes outside to use a phone booth, and for some reason, I still had the ColorCon in, flashing the shadows with red. It was a perfect combination of shadow and sun in the deep background, and the time of day was perfect to really feel it. So, when you look at it, it feels like an old piece of contaminated film. I couldn't get over how beautiful it was, so I didn't change it. But later, people would come into the DI and ask, 'Doesn't that look red in the shadows?' I'd say, 'Yeah, it looks exactly like it's supposed to.' It just felt like Chinatown to me. So, in some ways, the location is going to dictate what you do, and sometimes that means throwing out what you intended.

Is Darren particular about cameras and lenses or certain kinds of shots?

He's extremely particular because he has a great sense of what cuts together to tell a story. It's not the only way to do things, but it's his way, and I completely understand where he's coming from. He's obsessive about eyelines; if he knows he's going to cut between two shots, he wants them lined up perfectly.

How did *Highest 2 Lowest* come together?

I got a phone call from Spike, which is always exciting. He's like, 'I'm doing a movie with Denzel. It's a reinterpretation of Akira Kurosawa's

High and Low.' What do I say to that? 'I'm in.' I hadn't even read the script yet.

How did you intend to reinterpret the original film?

Well, we're talking about New York City, and we don't exactly have the relationship between the house on the hill and the [Yokohama] ghettos below like you do in Kurosawa's film, but Spike found a way to put David King [Denzel Washington] in the Olympia, one of the tallest buildings in Dumbo, Brooklyn. He used the Brooklyn Bridge as our low perspective, a symbol of the common man, going between Manhattan and Brooklyn, to look up at this king of industry. So he had that relationship figured out.

I think what's so interesting about the original film is the juxtaposition between the haves and the have-nots, the high and the low. Our film looks at it through the lens of a struggling artist versus a Quincy Jones-level producer. That relationship is very similar. I was interested in how we were going to create a juxtaposition between the opulence of David King's clean and curated home and the mayhem of New York City — riding the subway from Brooklyn to the Bronx with a bunch of rowdy Boston fans, and the Puerto Rican Day Parade just two blocks away from Yankee Stadium. Spike, at one point in prep, was like, 'Where can we shoot some film?' I said, 'I know the perfect place. We should shoot 16mm, and we should start introducing it once he leaves the apartment.'

So, we just started shooting everything: Arri Mini LF, Fujifilm GFX100 II, 16mm and even Super 8mm. When we went into the subway, we had two Arri 416s and a Super 8 camera. For the Puerto Rican Day Parade, I had two 16mm cameras, Super 8 and the Mini LF on rotation in the hopes that when this thing was cut together, the chaos would be reflected visually by the change in format.

Did you mix film stocks?

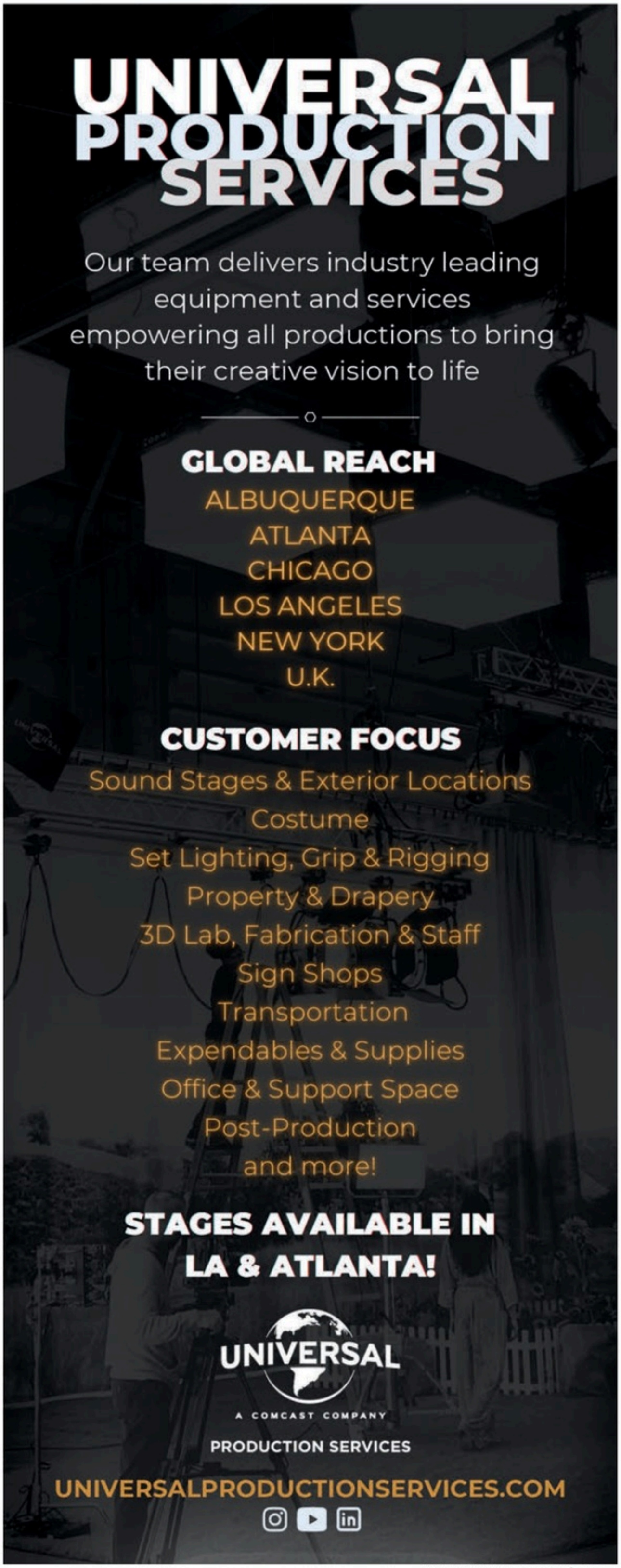
I was shooting a lot of 16mm Ektachrome when the light wasn't too crazy. I love the look of it. We processed it at Cinelab in New Jersey as reversal, *not* cross-process — I wasn't interested in that. We shot color negative when I had a lot of hard highlights and shadows. It brought me back to another time and place where you made those kinds of decisions. I just wanted to be chaotic. It was funny, when our colorist, Alex Bickel, did the first pass of the movie at Color Collective, he was like, 'I think I've got this all balanced out for the subway.' I'm like, 'No, no, no, just let it be distracting.'

Spike's films are very cinematic in a way that doesn't hide his technique.

Although his roots are very classical, from the moment he came onto the scene, he was a modern artist. In *Highest 2 Lowest* there are a few times when he double-cuts and triple-cuts a moment between two characters, like you would a stunt or an explosion. He does it when Jeffrey Wright [playing Paul, King's friend and driver, whose son is the kidnap victim] is in King's office, imploring him to pay the ransom money. Denzel is slamming all these things in a pile on the desk, and Spike is double-cutting and triple-cutting that. He does it at the end when A$AP Rocky's character [Yung Felon, the kidnapping mastermind] flips out on Denzel in the jail's visitor area. We hold on Denzel in profile for a while, then he gets up to leave, then we cut to a shot in front of him and he leaves again. Sometimes Spike will put a camera in a place and everybody's like, 'Why is the camera here? Then you watch the film cut together and you understand why he did it that way. I think that speaks volumes about who he is as an artist.

Is he particular about cameras and lenses?

Both Darren and Spike place a lot of trust in me because they know that I want to accomplish their vision. They know I'm not trying to work



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Yung Felon cuts a track at a recording studio while the kidnapped boy's father, Paul (Jeffrey Wright), and King track him down.

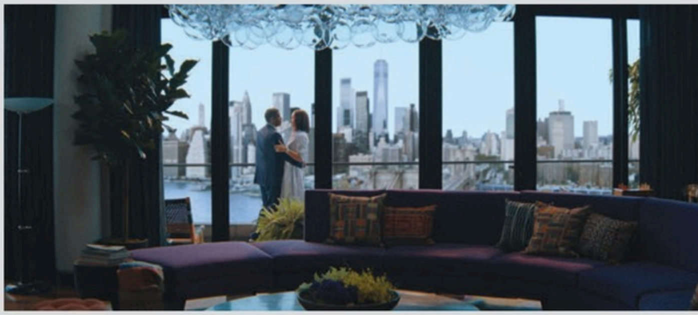
outside the construct of what they're trying to do. When I told Spike why I wanted to mix anamorphic lenses with spherical lenses, he understood because we had come up with that language of trying to be chaotic. When we're inside King's apartment at the beginning of the film, which is very dialogue heavy, we used Atlas anamorphic lenses. I didn't always like the focus falloff on the sides of the frame in wide shots with a lot of people, so in those cases, I switched to a wider K-35 to get cleaner group shots. When we went outside, I switched to the Canon Dreams [also known as the Canon Rangefinder and Rangefinder-X series] for the digital camera. I was looking for something that would make the urban highlights in the distance bloom, even on the exterior nights.

Beyond your initial conversations, how often did the Kurosawa film come up?

We didn't talk about it too much, but I definitely thought about how our film would measure up to the original. Spike and I agreed we're not doing a remake, but a reinterpretation. Kurosawa's version was a great jumping-off point. What's so special about the original was always on my mind because it's one of my top 25 movies of all time. The thing that always struck me about that movie was the view out the windows of that house, and the transition from being inside the house to outside the house. Toshiro Mifune's character ends up in an opium den, and by the end of the film there are three more dead bodies. By that point we're a different movie, where action has replaced some of the grimness.

What's one thing that working with Spike has taught you about

Spotlight on Virtual Production | "A Certain Artifice"



The floor-to-ceiling views of the Brooklyn Bridge and Lower Manhattan that David King (Denzel Washington) enjoys from his luxurious perch in the Olympia Dumbo are shown from different vantage points at all times of day and night. To create them, a team at Fuse Technical Group used plates captured from the 30th floor at the location and projected them on a 130'x25' LED wall that they designed, built and operated in the apartment set at Steiner Studios. Three-dimensional elements such as boats in the river and cars on bridges were added to the imagery, and skies were replaced to reflect the time of day.

The wall was powered by Rosco's RDX Lab, an Unreal Engine-based approach to presenting large-format photography that was developed by FuseFX. (Ed. Note: FuseFX has no relation to FTG.) Virtual-production supervisor Brian Doman worked with Rosco; Matthew Libatique, ASC, LPS; and wall-media programmer Nic Jones to ensure functionality and content quality.

Of the results, Libatique says, "There's a certain artifice to it, but I think that contributed to the fable-like quality of this character's life."

FTG also delivered a custom solution that enabled Jones to drive the LED wall's light-card operations — including shape, color, temperature, intensity, opacity and screen position — directly from his lighting desk instead of using the RDX toolset. He could also animate the cards and apply pre-selected imagery as an alternative to solid color values. "Matty's worked with these tools before, and he knows where he wants the light," Doman says. "Integrating [control of the wall] with Nic's board meant that he and Matty could use their established shorthand."

He adds, "This new ICVFX workflow comes out of two camps — the lighting-equipment companies, where LED technology is developed according to the needs of cinematographers and gaffers, and the VFX facilities, where the goals are defined by the VFX supervisor. FTG is historically aligned with the cinematographer and gaffer. Understanding what equipment they're deploying and how they're going to shoot is the basis of our workflow."

— I.M.

Tech Specs: ***Caught Stealing***
Aspect Ratio | 1.85:1
Cameras | Sony Venice 2; DJI Ronin 4D-8K, Inspire 4
Lenses | Zero Optik Bausch & Lomb Ultra Baltar; Sony G Master prime

Highest 2 Lowest
Aspect Ratio | 2.40:1
Cameras | Arri Alexa Mini LF, Arriflex 416; Fujifilm GFX100 II; Kodak 8mm
Lenses | Atlas Mercury 1.5x; TCS Canon Dream, Canon K-35
Film Stocks | Kodak Vision3 7219, 7213; Ektachrome 7294

filmmaking?

Anything can work. Anything goes because Spike tells the story in a very unique way, and he wears it on his sleeve. No one makes movies like him. No shot is too small — it'll make the film. When there's a music cue and he's bringing us into a scene, he'll often use a half-dozen shots or so of inanimate objects in the character's space to give you an introduction to the person you're about to meet. Those shots are important because they figure into the big picture of what he's doing.

If anything can work, you might as well shoot as much as you can while the camera's up.

Yes, but that can depend on who you're working for. Sometimes Spike likes to get coverage through multiple cameras, and Darren's very much a single-camera director, but he'll still get 10 shots for a scene like Spike does. It's almost as if you're playing a sport when you're working with Spike, and the pace at which he coaches the team is one to adhere to. He likes to get the performance within a few takes. If he has two or three cameras up, he feels like he has the scene covered, but by the time we're filming, it might be one moving camera. Spike just listens to the movie and subsequently does what he wants.

You've worked with Darren for many years. Talk a bit about how that's evolved.

Darren's early films with me were very strict in terms of language and what we were trying to accomplish. As we've gotten older, the actors' performances have taken greater precedence. I've watched him direct so many actors. He not only guides the actors to give great performances; he encourages every key member of the technical team to make a great film, whether it's me, the editor, the production designer or the sound mixer. Both Darren and Spike understand that cinema is not just one or two elements — it's every element, and every element is given its opportunity to add to the end goal. Through Darren, I learned that even though all of the great, meticulous detail that goes into his movies has been precisely thought out by him, and even if he doesn't have a shot list per se, you can really tell a story just by creating a visual language.

***Caught Stealing* and *Highest 2 Lowest* are both New York movies, but they're very different visions of the city.**

I didn't grow up in the city. I'm originally a New Yorker, but I've spent a lot of time in California, so I can see the city in different ways. I've shot three features here recently, including Bradley Cooper's film *Is This Thing On?*, which tells the story of a guy coping with a marital separation through an immersion into New York's comedy scene. We shot that one mostly at the Comedy Cellar in the Village and in the suburbs. These films were all made within the span of a year and a half, and they honestly don't intersect *anywhere*. I've been waiting my whole career for that kind of phase. Everybody has different experiences in New York, and everybody brings a different perspective to the city, but the differences between all of these films draw a straight line to the lived history of the filmmakers telling the stories. ϕ

Top: Russ leads Hank to the storage unit where he's stashed a pile of cash sought by the Russian mob. Middle and bottom: A pair of feared Hasidic hitmen (Vincent D'Onofrio, left, and Liev Schreiber), also pursuing the money, create mayhem at a Russian club during an afternoon party.

PHOTO ON THIS PAGE BY ALEX NELSON. PHOTOS ON OPPOSITE PAGE BY JOEL HONEYWELL.

Launching the ASC Todd-AO Lenses

The Society retrieves a set of specialized optics from the archives of the ASC Museum and restores them for the rental market.

By Jay Holben

In 1952, when the popularity of television led more than 6,000 U.S. movie theaters to permanently close, the ultra-widescreen film *This Is Cinerama* kept playing to sold-out audiences. Hollywood decided widescreen formats were one possible key to luring audiences back to theaters, and every studio jumped into the race to create them.

Michael Todd, a producer of *This Is Cinerama*, decided to craft a widescreen system that wouldn't require three integrated cameras and projectors, and he turned to a larger film negative. He partnered with American Optical Company in Buffalo to create Todd-AO, and he enlisted the Mitchell Camera Corp. to reconfigure a Fearless camera to run 65mm vertical film five perforations tall.

The new system required new optics, and those were created by Robert E. Hopkins of the Institute of Optics at the University of Rochester. Hopkins designed a series of extremely wide-angle lenses to capture an equivalent angle of view as Cinerama's with a single camera.

Starting with *Oklahoma!*, only 16 motion pictures were filmed entirely in Todd-AO 65mm between 1955 and 1971, when the popularity of roadshow-style presentations waned. Two won Academy Awards for Best Cinematography, and another 10 earned nods in that category — and two won Best Picture Oscars and an additional five earned Best Picture nominations. The films included *Around the World in 80 Days*, *South Pacific*, *Porgy and Bess*, *Cleopatra*, *The Sound of Music* and *Hello, Dolly!*

An Exciting Discovery

Over its 106-year history, the ASC has amassed an impressive private collection of cameras, lenses and cinematographic tools, an effort shepherded in recent years by ASC Museum curator Steve Gainer, ASC, ASK and co-curator Richard Edlund, ASC. As with many collections, not all of the artifacts can be displayed for all to see; many reside in storage. During an inventory of archived items in early 2024, Gainer happened upon a case that was stuck closed, and when he pried it open, he found something quite remarkable: a set of Todd-AO lenses. As it later turned out, Gainer recalls, "there were a lot of cases with Todd-AO stuff crammed into a portion of the Clubhouse basement, and they'd been there for years. I hadn't had the opportunity to go through it all because I was shooting when it came in."

Gainer took the case to the ASC President's Office, occupied at the time by Shelly Johnson. Gainer recalls with a laugh, "Shelly was sitting at his desk and I walked in with a dirty case, saying, 'Check these out!'"

Johnson recalls, "I think at that point, I had probably seen two Todd-AO lenses in my life, and now there were 14 of them on my desk! It looked like that box might have been underwater at some point, because the lenses had moisture damage and fungus. But the minute I held them in my hand, I could feel the history, the energy emanating from those lenses."

Gainer suggested rehousing the lenses and making them available for rent as a fundraiser for the Society. Says Johnson, "It was too uniquely an historic and rare opportunity to ignore. Vintage glass can be such a good partner with digital cameras, there are more 65mm-format cameras coming onto the market, and glass to cover these much larger sensors is in short supply. I thought this might be the perfect time for the ASC to bring these out."

Johnson took the idea to the ASC Board of Governors. "There was a rather lengthy discussion and approval process," he recalls, "but there was also a lot of enthusiasm. We knew it was important to follow through correctly, since these were going to be an ASC set of lenses — they had to live up to that standard.

"The funds generated from rentals of the lenses will help in funding ASC initiatives," Johnson continues. "We felt the timing and the cause were more than worthy, and that it would be amazing to put these legendary lenses into the hands and creative visions of today's filmmakers."

This is the first time the Society has made historic equipment available for use.

Zero Optik Steps Up

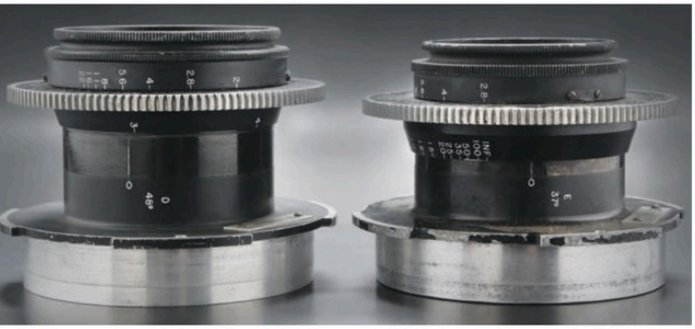
The lenses were mostly inoperable due to years of neglect. Some apertures and focus mechanisms were frozen in place. At Gainer's suggestion, Johnson reached out to ASC associate member Alex Nelson of Zero Optik, a renowned lens-rehousing company. "Alex was incredibly excited to be part of this project, and he understood right away what we wanted to achieve," Johnson says. "He appreciated the merit of these lenses, and we have pictures of him taking them apart the very afternoon we dropped them off!"

Opposite: The ASC Todd-AO lenses, restored by Zero Optik. This page, top: At Arri Rental in London, Greig Fraser, ASC, ACS tests the ASC Todd-AOs and offers his insight to custom-tune the series and accentuate their unique look. Above, left: ASC associate member Alex Nelson uses a spanner wrench to remove a lens' rear elements and adjust air gapping to tune the lens character to Fraser's aesthetic. Above, right: The unfinished 105mm on an Arri Alexa 265 camera for testing.

Nelson explains, "In our existing catalog of rehousing, we have a little more than 200 different lenses, which provides us with a base level of versatility where a project like this is concerned. Once we got the actual lenses, the most difficult part was just getting them apart! They were, quite literally, frozen in time. The mechanics were locked together, some screws had to be drilled out, and we had to do really careful surgery to get the glass out. Once they were apart, the design effort wasn't so treacherous because we have this huge library of components. I could model the optics and then start to workshop the new housing. 'Let's try this ... Maybe these iris components would work ...' It's sort of a lens Lego set!

"The trickiest ones were the 18mm and 28mm," he continues. "With the 18mm, by virtue of that being so wide and having to cover that format, just keeping all the metalwork out of the way was a pretty big challenge. The 28mm was essentially unrehousable until I cut some of the optics out of the original housing. There was a doublet at the rear of the front optical group that was crimped into the metal and basically sat right up against the iris. I had to cut it free by putting it on the lathe — not even turning the lathe on — and just slowly rotating it by hand and adjusting the chuck by half a thousandth of an inch and then turning it by hand again ... slowly turning the metal around the glass into foil that was thin and weak enough to carefully pluck the doublet out."

The ASC could have updated the lenses in a variety of ways during the rehousing process. Johnson recalls the discussions among the Board



Above, left: Two of the 1st-generation Todd-AO focal lengths, as they were found in the ASC basement. This pair was identified only by their respective angles of view: 48 and 37 degrees. Right: Four focal lengths of the 2nd-generation series, also in the same condition they were discovered. Below: A frame capture from *Oklahoma!*, the first film shot in Todd-AO 65mm.

members: "Would we update the coatings? Would we swap out any glass elements? Would we tune them at all? Did we want to update the irises? How much do we want to clean them up? In the end, we decided to leave them in as close to the condition that we found them as possible, maintaining that vintage, aged character and preserving the lenses for what they are."

While the coatings remained intact, all the iris mechanisms were replaced with modern, circular irises due to the poor physical condition of the original blades and overall performance. (As the shape of iris blades plays a significant role in the bokeh of the lens, replacing the original geometric blades with circular ones makes a more pleasing bokeh and reduces pupil aberrations.)

Johnson and his successor in the President's Office, Mandy Walker, ASC, ACS, consulted with Greig Fraser, ASC, ACS, known for his eclectic lens choices and refined eye for vintage glass, who provided his optical expertise and taste to custom-tune the lens set. Johnson recalls, "Greig had a lot of feelings about the edge falloff and exactly the kind of swagger that the lenses were capable of, and how to work with Alex to unify that all into a set of nine focal lengths so that they were somewhat consistent in terms of their characteristics."

"Super-Buttery Smooth"

When the lenses were ready for inspection, Fraser and Nelson looked at them together at Arri Rental in London. "We looked at the overall sharpness, and for the most part, every lens delivered was great," Fraser says. "A couple didn't quite resolve as well — the 18mm, especially wide open — but if you stop down a bit, they all resolve really well. We did some adjusting on the overall field flatness, but the center is sharp. They're definitely vintage lenses, with a real aura and personality. They're super-buttery smooth, and that's a description I don't find common with too many lenses. They soften up a digital image beautifully, but they don't create something that looks broken."

Nelson notes, "It's a challenge to tune a set of lenses without a specific project in mind. Greig and I were sort of chatting through what could give them a more general appeal and maintain their native character. We didn't want to make them aligned to any particular personal taste, but rather make them consistent across the set.

"They perform surprisingly well considering most of them date to the 1950s and '60s," Nelson continues. "The coatings are consistent across the series — largely magenta with a little bit of amber in there. Broadly

TOP PHOTOS COURTESY OF *THE CINE LENS MANUAL*.
BOTTOM FRAME CAPTURE FROM *OKLAHOMA!* (SAMUEL GOLDWYN FILMS).

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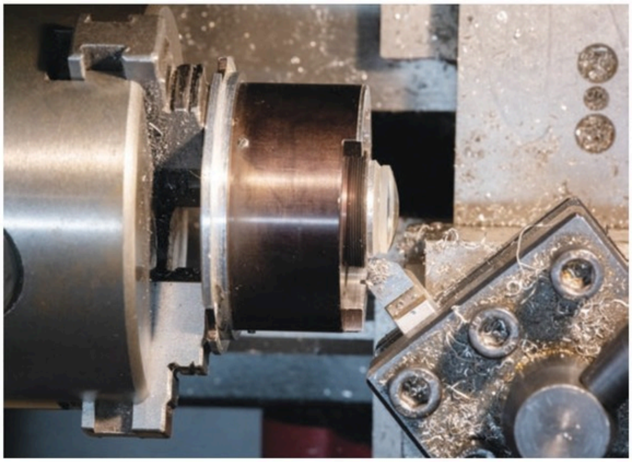
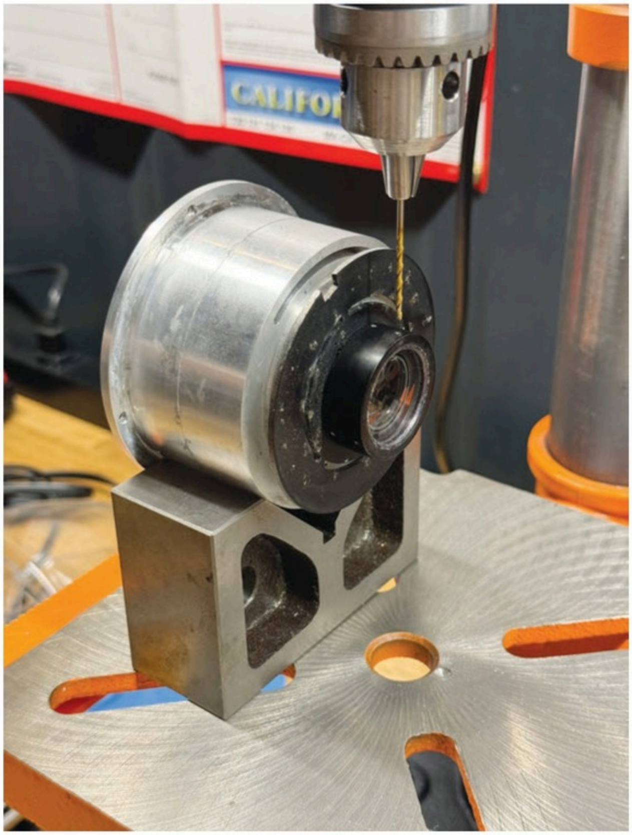




Top: Having placed the lens group on his lathe, Nelson carefully turns it by hand and shaves 1/2000 of an inch of the metal housing to free the rear glass element from the original housing. Above: Drilling out frozen screws in the original housing.

speaking, they have a very flat field, but with some falloff in the corners on the 65mm format. We tweaked airgaps in the design to bring the set into alignment without sacrificing the inherent qualities. They do flare, but they don't have a lot of veiling glare, surprisingly. The bokeh, for the most part, is very smooth. Almost the whole set resolves 200 line pairs in the center, so they're extraordinarily sharp there and fall off in the corners.

"We've designed them to work with PL, LPL or E mount, but we could adapt them to a Maxi PL for something like a 765 camera," he adds.

The set comprises nine focal lengths (a combination of different generations of Todd-AOs):

- 18mm T5.3, CF: 1'1" (4th gen)
- 28mm T3.7, CF: 8" (3rd gen)
- 40mm T2.8, CF 1'2" (likely 2nd gen)
- 50mm T2.2, CF: 1'3" (3rd gen)
- 55mm T2.8, CF: 1'6" (2nd gen)
- 60mm T2.1, CF: 1'7" (1st gen 48-degree)
- 80mm T2.9, CF: 2'1" (1st gen 37-degree)
- 105mm T3.3, CF: 2'9" (2nd gen)
- 135mm T4.1, CF: 4' (Unknown)

(For a complete list of all Todd-AO lenses ever produced, see sidebar, opposite page.)

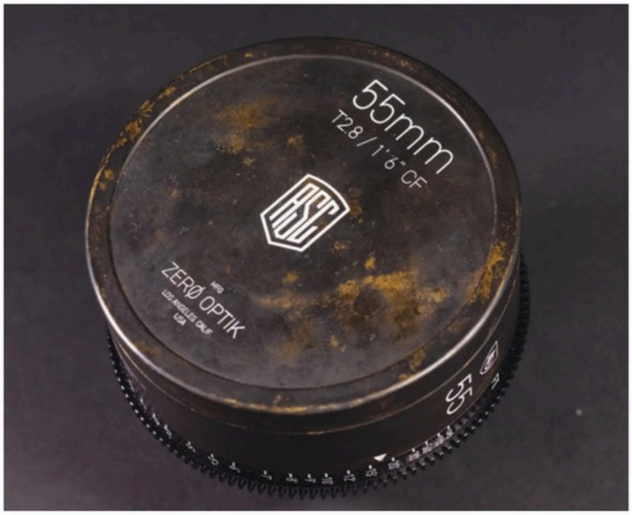
In the Field

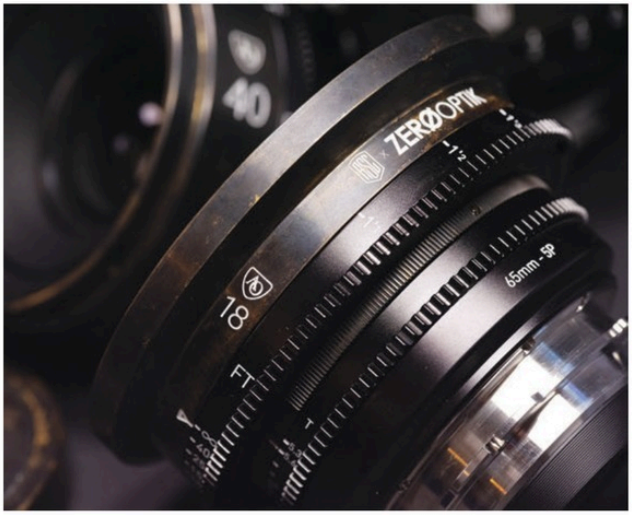
The first to get their hands on this new set of lenses was Christian Sprenger, ASC, for an episode of the upcoming Apple TV Plus series *Widow's Bay*. For a flashback episode in the series, Sprenger was looking for something special to differentiate the visual style of the past from the rest of the series, which was shot with the Arri Alexa 35 paired with Old Fast Glass/Ancient Optics Tamashii primes — designed and built by Zero Optik and rented from Keslow Camera — as well as a set of Zero Optik Olympus OM primes. At the suggestion of Brad Wilson, Keslow's vice president of business development, Sprenger took the leap and selected the ASC Todd-AOs, essentially sight unseen. He paired them with the Arri Rental Alexa 265, shooting in 1.43:1 aspect ratio.

"I work with vintage glass almost exclusively, and Brad told me about these really special lenses that Alex Nelson was building for the ASC," Sprenger notes. "There's only one set in the world, they haven't been used since the '70s, and they cover the 65mm format. We didn't really get much of a chance to test them. They showed up, like, three days before production, and we did a quick series of flare tests and tested them to see what they looked like wide open — and then we just ran with them.

"They're absolutely mind-blowing, and we shot some incredible things with them," he continues. "They have this painterly quality that you hope your lenses will have, but most of the time they don't. We ended up on the 60mm a lot, as it has this really beautiful kind of swirly bokeh and feels like the most portrait lens of the set. The 18mm is amazing — it's incredibly rectilinear without any notable distortion, which is crazy for a lens that wide. They all have good close focus, something that Alex always does so fantastically with his rehousing. The size and form factor of the lenses are also great. We put these lenses through everything: in splash bags, on a Ronin, crazy handheld chasing actors down steep slopes. They're not much heavier than the Tamashiis. We didn't treat them any differently than any other lens, and they have such an elegance to them. There's not that 'snap' in focus that you get with some

PHOTOS ON THIS PAGE AND OPPOSITE BY ALEX NELSON.





Left: A look at the special textured patina Nelson designed for the housings, to pay homage to the original lenses and their aged brass. This texture is seen throughout the entire ASC set. Top, right: The 18mm focal length, the widest lens in the series, with the equivalent field of view of an 11.5mm in Super 35.

Todd-AO Focal Lengths | Through the Generations

The original four Todd-AO 65mm focal lengths were identified by their angle of view, not focal length:
- 37 degrees (78mm)
- 48 degrees (60mm)
- 64 degrees (36mm)
- 128-degrees (12.85mm, the famous “Bug-Eye,” named for its 9"-diameter front element)

In 1963, the set expanded with a 2nd-generation series to include:
- 30mm T3
- 40mm T3
- 55mm T3
- 105mm T2.8
- 150mm T3.2

The series was further expanded in 1967 with the third generation:
- 28mm T3.5
- 40mm T3
- 50mm T2.3
- 60mm T2.3
- 75mm T3
- 100mm T3
- 150mm T3

The last generation of these primes were released in 1971 and included:
- 18mm T5.6
- 28mm T4
- 40mm T3.5
- 50mm T2.6
- 60mm T2.5
- 75mm T3.5
- 100mm T3.5
- 150mm *f*/3.2
- 500mm *f*/5.6
- 1000mm *f*/4.5

Later in the 70s, two “Ultra-Fast” focal lengths were added:
- 35mm T1.5
- 125mm T1.7

modern glass; there’s a very gentle shift from in-focus to out-of-focus.

“I fell deeply in love with these lenses, and I feel kind of heartbroken that I may never get to work with them again. They’re going to be so popular and in high demand, and there’s only one set — I’ll probably never even *see* them again!”

“A Treasure Trove”

“These lenses, designed during that era, are suited so perfectly for this current batch of sensors that you couldn’t have designed it better!” Fraser marvels. “It’s a treasure trove.”

Says Nelson, “I was thrilled to be able to work on these. This is the kind of stuff I started this company for. General rehousing is what keeps our lights on, but these special, one-off projects really make it worth coming in every day.”

For Gainer, who has been curating the ASC Museum for more than three decades, it’s a watershed moment: “My two big dreams, my benchmarks for the success of the collection, were the Billy Bitzer camera and the *Citizen Kane* camera, and we have both now. But this is like giving birth to a joyous child! These lenses will have a whole new life and not just sit in a museum.”

Walker adds, “It’s great to tap into our amazing Museum collection and enable cinematographers to craft new images with these legendary tools. It opens the door to possibly putting more of our historical tools back into action someday.”

The ASC Todd-AO lenses were officially unveiled at the Clubhouse in September (see Clubhouse News, page 69) and are now available to rent at Keslow Camera. They will be circulated among other rental facilities in Los Angeles in the future. Says Johnson, “They literally came out of the dust, and now it’s possible for cinematographers to use this bit of history to create something new. It’s marvelous to see these lenses live on, allowing their presence to be felt once again onscreen.” O

Tron: Ares Returns to the Grid

Jeff Cronenweth, ASC and director Joachim Rønning bring digital beings into the real world.

By Noah Kadner

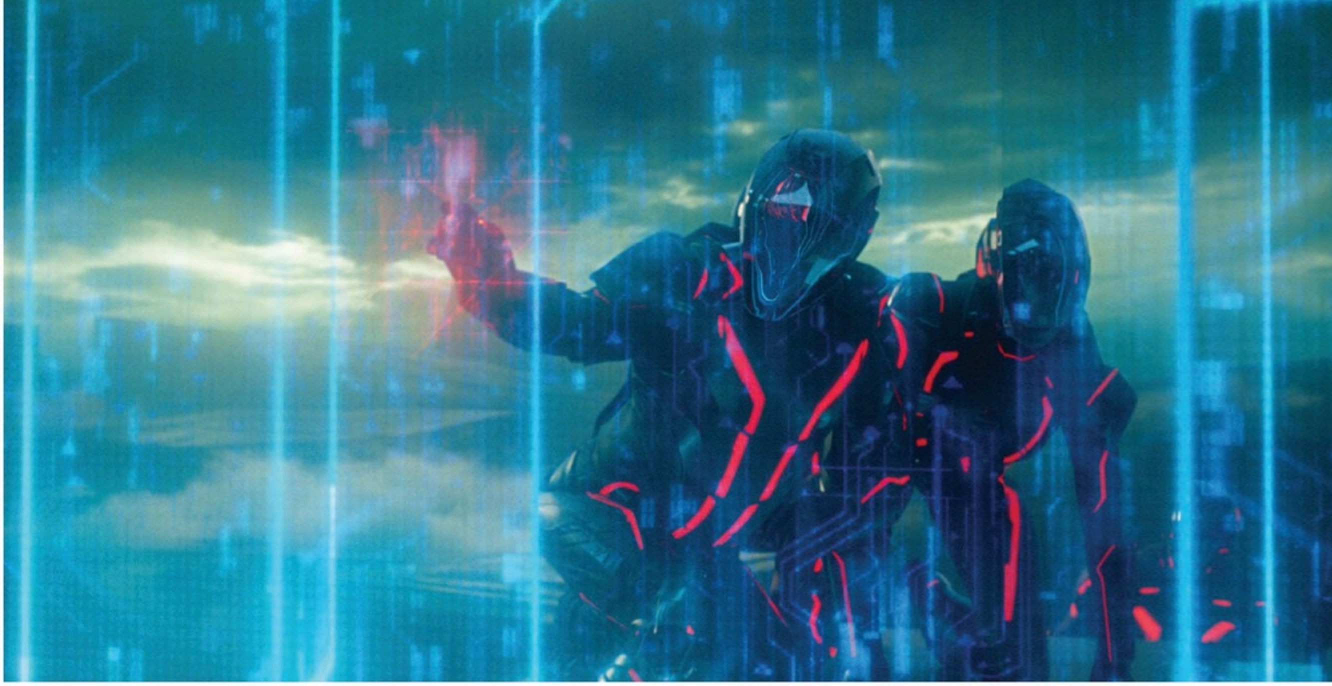
The convergence of cinematography and cutting-edge visual effects has always marked the *Tron* series, whose centerpiece is a cyber world within a computer system. The original 1982 sci-fi feature *Tron*, shot on 65mm by Bruce Logan, ASC, helped pioneer the use of CGI (*AC* Aug. '82), and the 2010 sequel, *Tron: Legacy*, shot by Claudio Miranda, ASC, ACC advanced further into the digital world with its use of extensive virtual environments and stereo 3D (*AC* Jan. '11). *Tron: Ares* director Joachim Rønning found the prospect of stepping into that world both intimidating and inspiring: "*Tron: Legacy* is a masterpiece. The first *Tron* also pushed so many boundaries. When the subject comes up, what immediately comes to mind is color."

Tron: Ares director of photography Jeff Cronenweth, ASC recalls "really enjoying" the original, noting that "it was among the first movies to use computers for visual effects, and they had to start from scratch and create a language that both programmers and filmmakers could understand."

The latest *Tron* features some familiar and new characters: game designer Kevin Flynn (Jeff Bridges), the protagonist of the first film; Julian Dillinger (Evan Peters), heir to the corporation once opposed to Flynn; Eve Kim (Greta Lee), a pivotal figure in the conflict between humans and sentient digital beings known as "programs"; and Ares (Jared Leto), a program designed as a military weapon that escapes Dillinger and seeks out Flynn.

Tron: Ares sees action unfold within digital systems — known as "Grids" — and on city streets, all captured on stages and at locations in and around Vancouver, Canada. Cronenweth partnered closely with production designer Darren Gilford, returning from *Tron: Legacy*, and visual-effects supervisor David Seager of Industrial Light & Magic to help realize the futuristic exploits. From designing multiple luminous Grids, bringing such spaces as the Extraction Room to life (see diagram, page 58); to building a wall of arcade games into computer-technology

BOTTOM PHOTO BY LEAH GALLO. ALL IMAGES COURTESY OF DISNEY.



Opposite: Ares (Jared Leto, in foreground) and Athena (Jodie Turner-Smith), astride their lightcycles, are "programs" from the Grid who have made their way from the digital world into ours. Above: The programs experience a tense moment within the film's "Encom Grid," distinctive for its blue tones. Below: Jeff Cronenweth, ASC eyes a frame.

company Encom's headquarters at Mammoth Studios in Burnaby; to staging a chase featuring the franchise's iconic "lightcycles" across city blocks of downtown Vancouver through the Rogers Sugar factory and onto the pier, the filmmakers leaned on a hybrid approach of large-scale practical builds combined with set extensions and virtual production.

Shifting Specs

Cronenweth continued his long collaboration with Red Digital Cinema on the production. "I've done most of my projects with different incarnations of Red cameras," he says. "David Fincher and I started on *The Social Network* with Red Ones that had the brand-new Mysterium-X chips [*AC* Oct. '10]. The company and I have developed a relationship over the years, and it has been amazing to be at the forefront of new technology and even custom-made equipment when needed."

During testing for *Tron: Ares*, the cinematographer compared Red to different digital cameras and to film, "and the Red V-Raptor XL 8K VV tested markedly better for our needs," he recalls. "It was not just me noticing — Joachim Rønning was thrilled." Having chosen the production's camera, the cinematographer maintained an 800 ISO setting throughout the production.

Though the filmmakers originally planned to shoot anamorphic, when the feature was slated for an Imax release, they shifted toward spherical and Arri Rental DNA LF lenses. "I'd used the DNA lenses on *Being the Ricardos* [*AC* Feb. '22] because I thought it was a great idea to take something that happened in the 1950s and shoot it with rehoused, vintage, tunable glass that had personality. I thought that approach also suited *Tron*, in that we have a pure and very precise world in the Grid, and to use vintage glass with artifacts, adjustable falloff, and a creamy, organic bokeh — with highlights that aren't all identical circles and may even breathe and change shape toward the frame edges — seemed the perfect visual offset to the mechanistic symmetry of the Grid."

He notes that Fujinon Premista zooms were pressed into service "one or two very specific times when the shot was designed around a physical in-camera zoom — and, of course, at times with the aerial unit and arm-car shots. In certain situations, I used Tiffen Black Satin filters to knock down sharpness and pick up additional flares and halation."

Cronenweth used the 2.39:1 widescreen framing as the principal aspect ratio but protected for the 1.90:1 for digital Imax exhibition.

His crew included A-camera/Steadicam operator Sasha Proctor, 1st AC Dan Morrison, additional operators Harold Skinner and Matt Tichenor, additional 1st ACs Alex Martinez and Yuko Eto, key grip Kim Olsen, gaffer Stuart Haggerty, and DIT Simon Jori. The latter helped to ensure image consistency across the production's mix of practical and

virtual environments with a variety of blackout tents shared by the camera teams and production units, as well as members of ILM's visual-effects crew.

Expanding the Grid

One of production designer Gilford's tasks was to expand the visual language of the Grid. He explains, "There are three Grids in our movie — we go back into the original Flynn Grid from 1982, which was great fun; there's the Encom Grid, which developed out of the look of *Legacy*; and there's a brand-new environment, the Dillinger Grid, which is very different. It was important to figure out how to differentiate them with tone, texture and color so the audience is always aware of where they are."

Seager elaborates, "The Dillinger Grid is very red; the Encom Grid has more of the blues and is brighter; and then we have the 1982 Grid, the Flynn Grid. Re-creating the feel of [the Flynn Grid] was an interesting challenge." He notes that due to the constraints of CG technology at the time, "the original Grid lacked the ability to control depth of field — that is, everything was in focus — and those limitations added to the aesthetic. We called it '1982+.' We wanted fans to recognize the original *Tron* Grid, but it also had to be compelling to new viewers."

Elements from each Grid also needed to be recognizable in the real world. "Taking what we know from *Tron* — the light lines, the fluidity, the palette — we created a new version that could exist in both places," says Gilford.

Cronenweth strove for photography that would play against the Grids' contrasting palettes. "Many sets that featured Grid effects were dominated by red, and that can sometimes be a challenge to capture," he notes. In those cases, the cinematographer worked carefully with Gilford to add white light strips to the sets to add contrast to the red. "There's a reason pictures have frames or a TV has black edges," he says. "We wanted to be sure the red always had context and never overwhelmed the viewer."

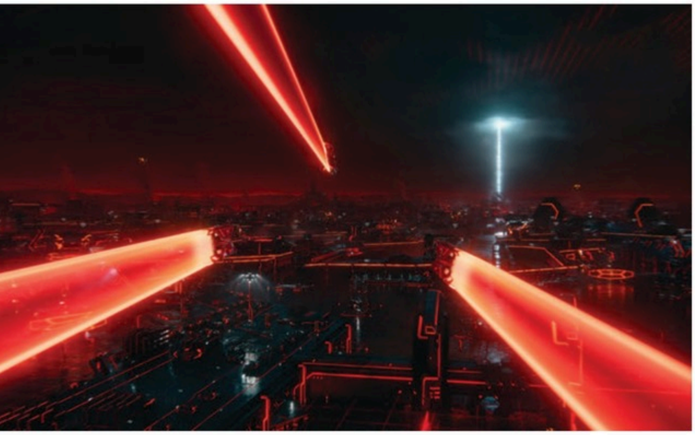
A Robotic Feel

To help visualize the world inside the computer, the filmmakers turned to motion control, leaning on a Sisu Cinema Robotic system, operated by Michael Morgan, to deliver precise, expressive camera movement. "With motion control, you can do exact, fast moves," says Rønning. "Even in dialogue sequences, instead of cutting between characters, the Sisu robot could move the camera super-quickly to another angle."

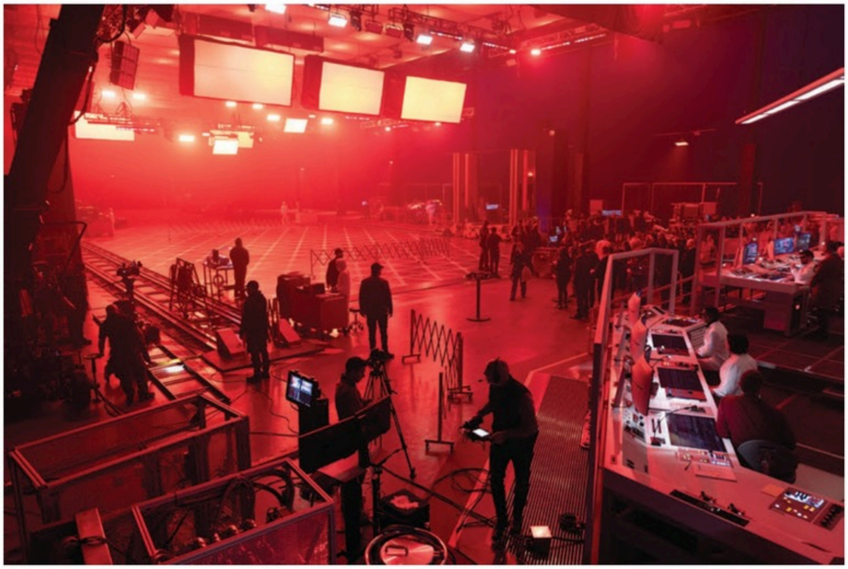
Cronenweth says the setups exceeded the crew's expectations. "Any time you hear the words 'motion control,' everybody expects a long wait, but this system was different. The ease of use and the speed with which they were able to set up and capture shots made it completely efficient."

The cinematographer points to a motion-control technique that stood out for its mix of technical complexity and visceral effect: "We had some shots where Jared Leto was lying on his back with a 24mm [Venus Laowa Macro Probe] half an inch from his eyeball, and we rotated the camera up and then pulled back away from him. That was terrifying."

Seager adds that the approach gave the Grid sequences "a robotic, mechanical feel, and that was part of the design." In addition to the Sisu robot, the production carried a variety of traditional remote camera heads, including a Libra Mini, Libra and M7 Evo, [the latter of] which we often mounted to the arm car for our lightcycle pursuit work — as well as a cable-cam with a specially configured, shoulder-mounted remote head for one fight sequence.



From top: Soaring through the red-hued "Dillinger Grid"; Ares has embarked on a personal mission; Encom CEO Eve Kim (Greta Lee) flees an imposing force.



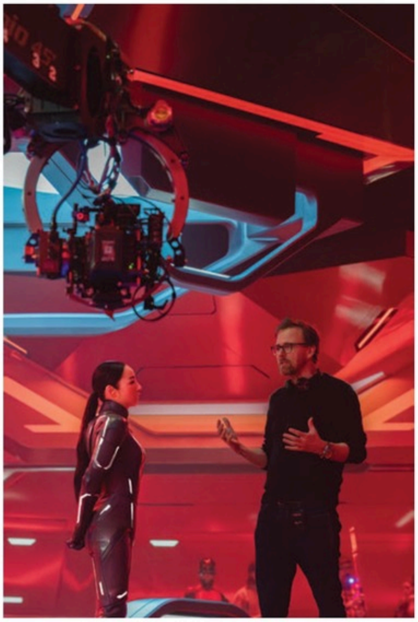
PHOTOS BY LEAH GALLO.

Above: Vast ceiling rigging provides a red illumination that comes to define the Dillinger Grid effects. Right: Director Joachim Rønning confers with Lee in the Extraction Room set. (See diagram, page 58.)

Cronenweth notes, “Our stunt riggers, led by Monte Thompson, developed a cable-cam rig that allowed us to mount a Libra head and program repeatable moves in a practical 3D space. We used the Libra control box built into a shoulder rig. The internal gyros allow the camera operator to shoulder-mount the system with an eyepiece and control the head as if it were physically on the shoulder. This setup was used for the climax of the Ares training sequence inside the Grid. It allowed us to create a dramatic sequence, in one shot, that moved from really close, low angles of Ares working his way through the training program to big, dramatic, high wide shots, all with a handheld feel.”

A Highly Anticipated Chase

One of the first ideas on the filmmakers’ whiteboard was a real-world chase scene featuring the lightcycles of the *Tron* universe. Seager recalls, “That’s the No. 1 thing you wanted to see. That was always high on the list as far as wanting to make it fully realized.” The sequence was staged in Vancouver primarily as a practical street chase and then enhanced with digital elements. “We treated it more like a chase you might see in a *Bourne* movie,” Seager notes. “We were out in the streets with stunt people



“We wanted to be sure the red always had context and never overwhelmed the viewer.”

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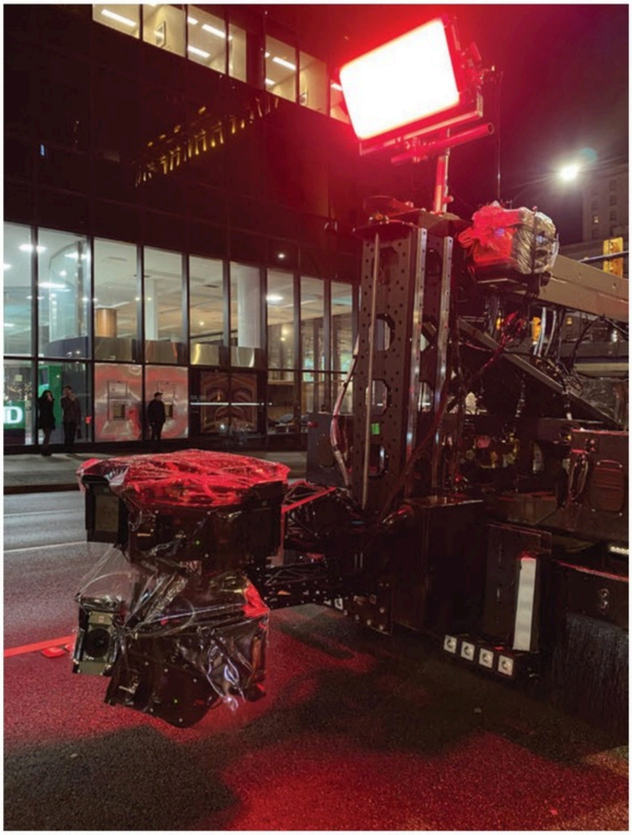
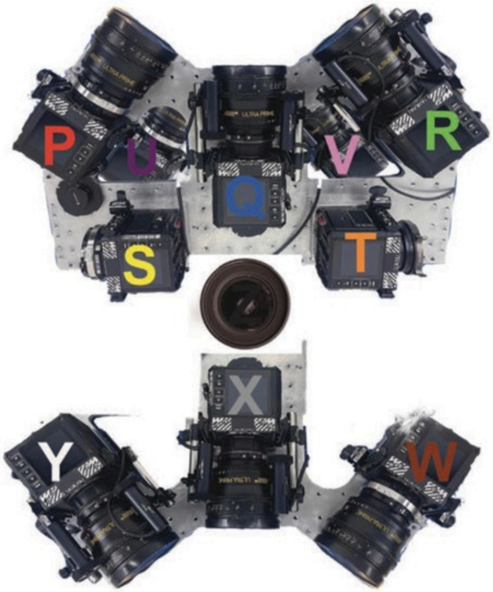




An array vehicle captured driving plates via Red Komodo 6K cameras paired with Arri/Zeiss Ultra Primes to capture front, side and up angles.

Spotlight on Virtual Production | Choosing the Right Scenes

Although *Tron: Ares* may seem an obvious candidate for extensive use of LED-wall volumes, the filmmakers applied the technique selectively, working at Mammoth Studios. “You might expect we would lean on virtual production for all the Grid work, but ultimately, we didn’t use it that way,” production designer Darren Gilford says. “Volume work turned out to be more valuable in places where the story is grounded in the real world.”

Jeff Cronenweth, ASC recalls, “In prep, the initial plan was to use it more, but for different reasons we scaled back. It became about choosing the right scenes where reflections and parallax were going to enhance the production value.”

One of the main applications was Encom headquarters, where upper floors were designed as a blend of physical set and volume extension. “By building the set a certain way and then using the LED wall, we could create views that would have been very difficult to achieve otherwise,” Gilford explains. “It was handy for tricky locations like that.”

The narrative’s mountain camp — hidden at high elevation and covered in snow, where Eve discovers what she’s been searching for — is another sequence that benefited from the approach. “The logistics of building a set at a remote location like that, on top of a mountain, would have been complicated,” Gilford notes. “Instead, we built the core elements and extended them with the wall.”

Visual-effects supervisor David Seager emphasizes that these choices freed up resources for the more elaborate, VFX-driven Grid environments. “We were heavily grounded in the real world,” he says. “Using the volume for the right moments let us concentrate our visual-effects work where it mattered most.”

Certain moments within driving sequences, such as dialogue and close-up shots, also drew on virtual production. In addition, Seager notes, “Mounted shots, like when you are with the person on the bike, are the ones you want to do practically. Shots with the more disconnected camera, where the camera is on another chase vehicle, were better in the volume.”

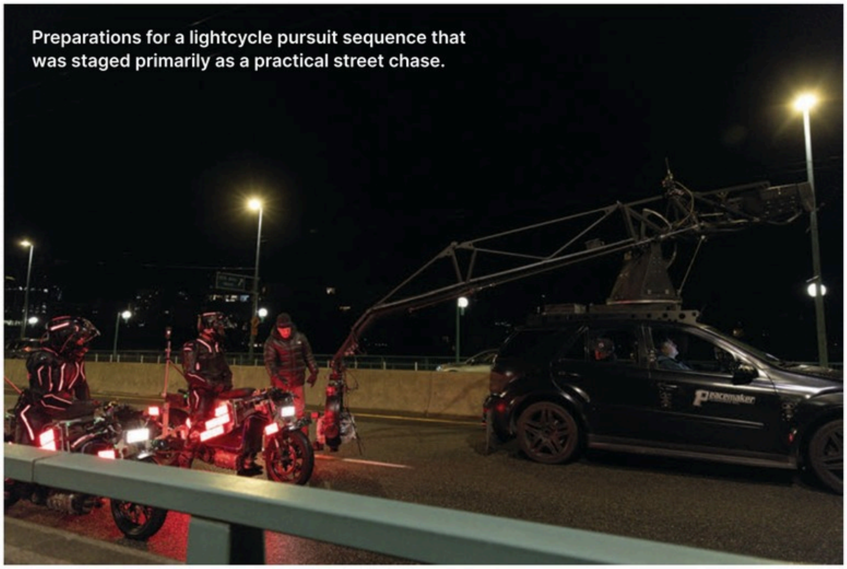
Cronenweth adds that the driving plates were captured via an array unit headed by Robert Finnigan and designed by David McIntosh, and were central to the workflow for driving scenes throughout — both for VFX additions to the practical scenes and for backgrounds in the volume. (See photos, at left.) “We had a 1st unit; a 2nd unit; and an array vehicle with 11 Red Komodo 6K cameras equipped with 21mm, 16mm and 10mm Arri/Zeiss Ultra Primes to capture front, side and up angles, respectively. The array vehicle captured all the plate shots for visual effects, as well as anything we missed that could be done later on LED walls.”

— *Noah Kadner*

wearing light suits and practical bikes they could ride. It just so happens that the main vehicle is a lightcycle.”

Seager highlights one particular gag in which the trail of a light cycle slices a police car down the middle. “We had a stunt vehicle that was actually cut in half. The front and back were rigged to drive apart on cue,

Tech Specs: Aspect Ratios | 2.39:1, 1.90:1
Cameras | Red V-Raptor XL 8K VV, Red Komodo 6K, GoPro Hero 12 Black, iPhone 15 Pro Max
Lenses | Arri Rental DNA LF, Arri/Zeiss Ultra Prime, Fujifilm/Fujinon Premista zoom, Venus Laowa Macro Probe



Preparations for a lightcycle pursuit sequence that was staged primarily as a practical street chase.

PHOTOS BY LEAH GALLO.

so you could feel the weight and chaos of real steel coming apart. Then we enhanced the separation with digital effects to give it that *Tron* edge. It was one of those moments that felt like it was happening right in front of the camera, but then the VFX pushed it over the top."

Rønning recalls, "[There were] so many cameras, process trailers, cameras on bikes, cameras on cars, cameras on carts — you name it. What was important for me was to see what we could do in-camera." The lightcycles mounted on process trailers — which could "go really fast," the director notes — allowed the actors to perform at speed while rigs provided stable mounts for multiple camera positions.

Some elements of these sequences called for LED-volume work. (See sidebar on virtual production, page 56.)

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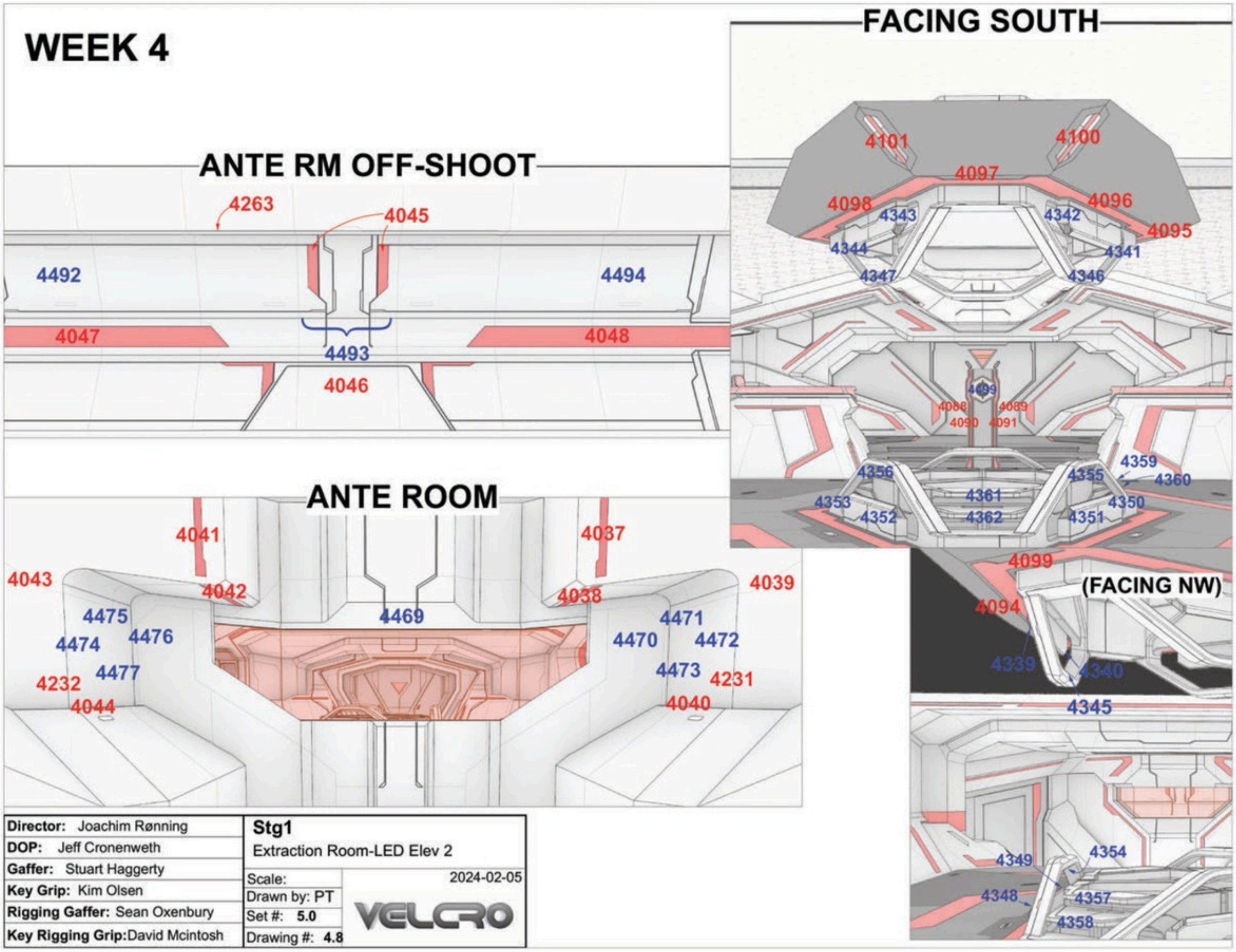
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Director: Joachim Rønning
DOP: Jeff Cronenweth
Gaffer: Stuart Haggerty
Key Grip: Kim Olsen
Rigging Gaffer: Sean Oxenbury
Key Rigging Grip: David Mcintosh

Stg1
Extraction Room-LED Elev 2
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2024-02-05
Drawn by: PT
Set #: 5.0
Drawing #: 4.8

A diagram of the Extraction Room set shows the practical LEDs built into the production design and their corresponding DMX channels.

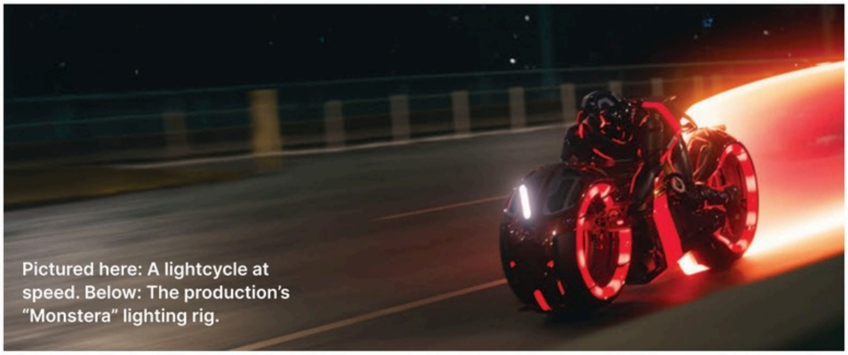
Suiting Up

The illuminated costumes that help define the *Tron* films were reimagined for *Ares* with new materials and embedded electronics. "We had many suits," Cronenweth says. "Wētā FX made them for us, and I had complete control over each one. There were something like 100 dimmer channels on each suit, and I could adjust them depending on what the set was, and whether it was inside or outside, nighttime on a lightcycle, or with characters standing next to each other with colors shifting depending on their journey point." Additionally, daytime brightness and color would need to be balanced for exteriors much differently than interiors or night exteriors.

As with the prior films in the series, color carried narrative weight. "The characters have different color suits that represent different meanings," Cronenweth explains. "We went through all the different LED options: reflective, direct, indirect, diffusers and color diffusers. [With] the exhaustive test we did with physical materials, LED-unit types, tones, and brightness, we arrived at the perfect continuous color and light levels of the light suits. It all boiled down to the ability to be flexible and manufacture them inside the suits, and then have enough diffusion not to see the actual diodes themselves.

To envelop the actors in the shifting palette of the Grid, Cronenweth's crew constructed a massive, interactive lighting rig they dubbed "the Monstera," which was used for all three Grid versions. Occupying nearly 50 DMX universes on its own, the rig incorporated 304 wireless LED-tube fixtures — 80 Astera Hyperions and 224 Astera Titans that were arranged to provide a flexible, programmable surround — supplemented with Astera AX3 puck units, AX10 Spotmaxes and Creamsource Vortex8s. Arri SkyPanel S60-Cs played alongside the Asteras, and everything was controlled through multiple GrandMA lighting consoles, with Spencer Howard serving as the main board operator and Dan Holt as the second board op. The overhead rigs ensured that reflections, highlights and atmosphere were captured in-camera.

The filmmakers also sought ways to "take what audiences know and push it into a slightly surreal space," Gilford says. One example is a chase across water that ripples with geometric, square droplets on the camera



Pictured here: A lightcycle at speed. Below: The production's "Monstera" lighting rig.

Spotlight on Monitoring | "They Were My Lifeline"

With interactive light sources built into costumes and sets, reliable monitoring was essential, and the filmmakers achieved it with Sony PVM-A250 25" OLED monitors. "Even when you're isolated in a DIT tent and are looking at monitors all day, you stay very connected," says Cronenweth. "Having quality monitoring gives you the clearest and purest opportunity to analyze your photography, especially when you have three or four cameras going simultaneously. The monitors and my DIT, Simon Jori, were my command central and a lifeline to continuity and composition.

Jori notes that on-set monitoring was done in an SDR color space because of the quantity of different feeds. In addition to the production's Red V-Raptors, "we used GoPro Hero 12s for surveillance angles and iPhone 15 Pro Max units for the [in-frame] social-media footage, both recording 4K Log," he says. "The iPhones ran the Blackmagic Camera app, and both devices were routed into the DIT workflow using Apple TV boxes to mirror the image and convert it to SDI.

"I usually use only one or two LUTs throughout a movie," Cronenweth adds. "I treat digital like a single film stock, so when there are fluctuations, I can better understand what they are being generated from."

Given the count of up to 21 cameras across various units, wireless monitoring was critical. This was achieved with Teradek Bolt 6 and 4K LT units, along with Wave Central CineVue Micro long-range wireless video-transmission systems operated by radio-frequency technician Dale Anaka.

— N.K.

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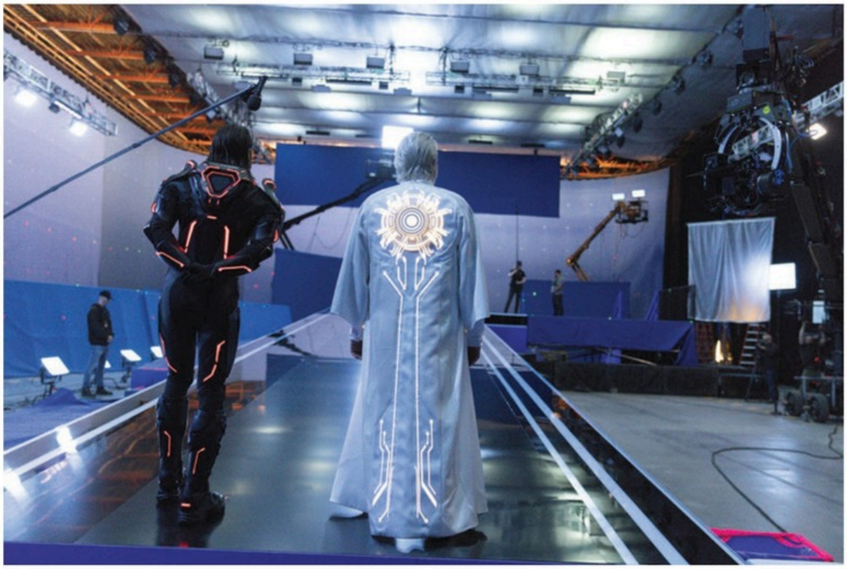

Capturing a scene set within the "1982+ Grid," in which Ares meets with game designer Kevin Flynn (Jeff Bridges), protagonist of the 1982 feature *Tron*.

PHOTOS BY LEAH GALLO.

lens that were added in post, extending the visual vocabulary of the *Tron* universe.

Hero's Return

Flynn's Arcade served as a pivotal setting in the first two *Tron* films, and Gilford felt it was essential to at least echo the concept visually in *Ares*. "There was no doubt in my mind that there had to be an arcade in this movie!" he says. "Story-wise, there is a moment where we go back to that look, but not in the sense you might expect."

The production found its opportunity in Encom headquarters, Gilford continues. "Because Encom is a game company, I created an arcade wall, almost like a living-plant wall. It's a giant wall of arcade machines with the classic games from the *Tron* films. It gave us a way to connect the history of the franchise directly to a new set."

Cronenweth embraced the opportunity to photograph the glowing machines as practical sources. The arcade machines, the majority of which were custom-built, became part of the lighting design as much as the architecture around them," he says.

Seager describes the 1982+ Flynn Grid: "A partial set was built for the floor and surrounded by bluescreen. We studied the original film and realized it had a lot of depth of field in the CG backgrounds, and [we] manipulated the contrast and grain structure, which helped us define and emulate that look."

When Bridges entered that set to reprise his role, the moment resonated throughout the production and with Cronenweth personally. "I first met Jeff when my dad, [Jordan Cronenweth, ASC], shot [the 1981 feature] *Cutter's Way*," he recalls. "I was very young back then, so when Jeff walked on set this time, he asked, 'Where's little Cronenweth?' I told him I wasn't that much younger than he was anymore, but I appreciated it. He even had the same stand-in he did on *Cutter's Way*, Loyd Catlett. He was telling stories about that shoot and my dad. It was really fun to go down memory lane like that."

"Not Like Anything Else"

Rønning describes the post phase on *Tron: Ares* as one of the most challenging parts of the project. "For much of the process, the film was so unfinished that my vision was slipping," he recalls. "I would go through a dozen variations of each detail, and over the course of a year, it finally came together. [The result] is what I dreamed about three years ago."

For Cronenweth, reassurance came in the grading suite, where he collaborated with founder and CEO of Company 3, Stefan Sonnenfeld, an ASC associate member. "We'd go to Company 3 whenever there were makeup tests or technical challenges and check material on their large screens. Half the time, Stefan was in London, and I was in Vancouver during the shoot and Santa Monica during postproduction, but the thing about Stefan is I have been collaborating with him for 30 years, and there is such trust with his experience in the color suite."

The final-grading process confirmed the choices made during production. "When I saw some of the final shots, I was taken aback by how cool it was," Cronenweth says. "*Tron* is its own world, not like anything else. Even though we started this project in 2023, the discussions in this film around artificial intelligence are really spot-on and part of the conversation right now. I hope this movie will be as fun and as eye-opening an experience for audiences as it was for me making it." O

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Visualizing With Gaussian Splats

Successfully planning complex production logistics depends on the ability to communicate the intent and design of sequences to everyone on the team. The sooner department heads understand the concept of a shot or sequence, the more efficiently they can marshal resources, including choice of location, art direction, set construction, costuming and stunt design, to achieve the creative goal.

One of the newer techniques that promises to improve this communication path is the Gaussian splat, a 3D visualization technology that emerged from computer-vision research and is somewhat akin to photogrammetry. (For more on photogrammetry, see The Virtual World, *AC* June '21.) Whereas photogrammetry reconstructs a surface from still photographs alone, splatting combines lidar depth data with color and reflectivity to create millions of tiny, overlapping vantage points, each rendered as a soft, three-dimensional "splat." Thanks to faster processors, advances in AI-based reconstruction and the ubiquity of lidar hardware, Gaussian splats are being implemented for previs, lighting discussions, shot design and even for virtual-production background plates. The technique represents the next stage of digital-twin technology, building on the groundwork of photogrammetry, but facilitating faster, easier, more detailed, and more economical capture.

Traditional lidar-scanning workflows generate a point cloud — a raw capture of millions of spatial points, defined by x, y and z coordinates in three-dimensional space. Point clouds describe geometry but carry little visual information. Gaussian splats improve on point clouds by turning the dots into tiny, colored, semi-transparent balls, which together form smooth, realistic surfaces instead of just scattered points. This results in a continuous model that appears more like the real world, capturing not only geometry, but also how surfaces respond to light. For cinematographers, this is a simple way to generate digital environments that can be navigated in 3D with the parallax and photorealism of a physical location.

On Location

Roberto Schaefer, ASC, AIC recently experimented with Gaussian splats on an independent production using an XGrids Lixel K1 scanner. The project involved capturing a remote village in Sutri, Italy for previs, planning and blocking. Schaefer explains, "Almost anyone can operate this device — you hold it at a slight angle with your phone attached and walk in zigzags, so the whole space is covered. You don't have to wait for a VFX unit or outside vendor to hand you material; you can scan the location yourself and soon start working with it in prep.

"Gaussian splats offer a way of modernizing and accelerating prep so that when you get on set, you go in much more educated," he adds. "It also helps avoid the endless return trips that typically happen after initial location scouts. This can save your production a tremendous amount of time and money, and you can have everything you need on your laptop within hours."

Tools for the Task

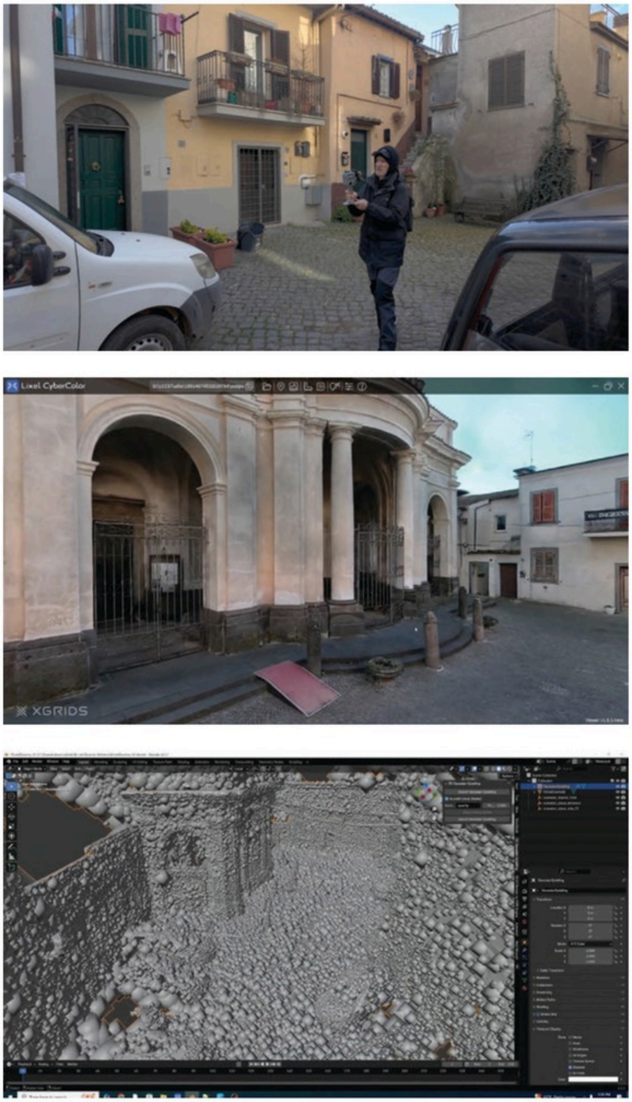
XGrids, a Chinese company co-founded by former employees of DJI, makes Gaussian-splat scanners for multiple industries, including architecture, construction and urban planning, where fast, accurate digital twins of locations and city spaces are essential. Architects and engineers use the technology to survey interiors and façades, and planners apply it to assess streetscapes and infrastructure. The ability to digitize large areas quickly with centimeter-level accuracy and realistic lighting information makes it a viable alternative to lengthy surveys or photogrammetry-heavy pipelines.

XGrids offers the Lixel K1 and the Lixel L2 Pro. The K1 is a compact unit pairing dual 48-megapixel panoramic cameras with a 360-degree lidar rig. It captures 200,000 samples per second at ranges up to 40 meters (131') with centimeter-level accuracy. Its portability makes it ideal for interiors and contained locations where speed and flexibility are critical. The L2 Pro is a larger device for more expansive environments, with ranges from 120-300 meters (390'-980') and capture rates from 320,000 to 640,000 points per second. Like the K1, it uses dual 48-megapixel cameras but adds higher-density lidar and AI-driven Simultaneous Localization and Mapping. SLAM tracks the scanner's position while assembling a unified 3D map in real time without relying on GPS or physical markers.

XGrids' Lixel CyberColor Studio software converts the raw scans into Gaussian splats. It can also combine drone imagery into reconstructions, enabling greater fidelity and perspectives that would be difficult to capture wholly by hand. For cinematographers, the ability to scan, for example, a building up to 40 meters tall from the ground level, with results comparable to traditional still photos or even photogrammetry, makes XGrids scanners valuable for scanning complex exteriors and constructed sets, or even generating imagery destined for LED volumes. The resulting digital environments can be carried through previsualization, production and post.

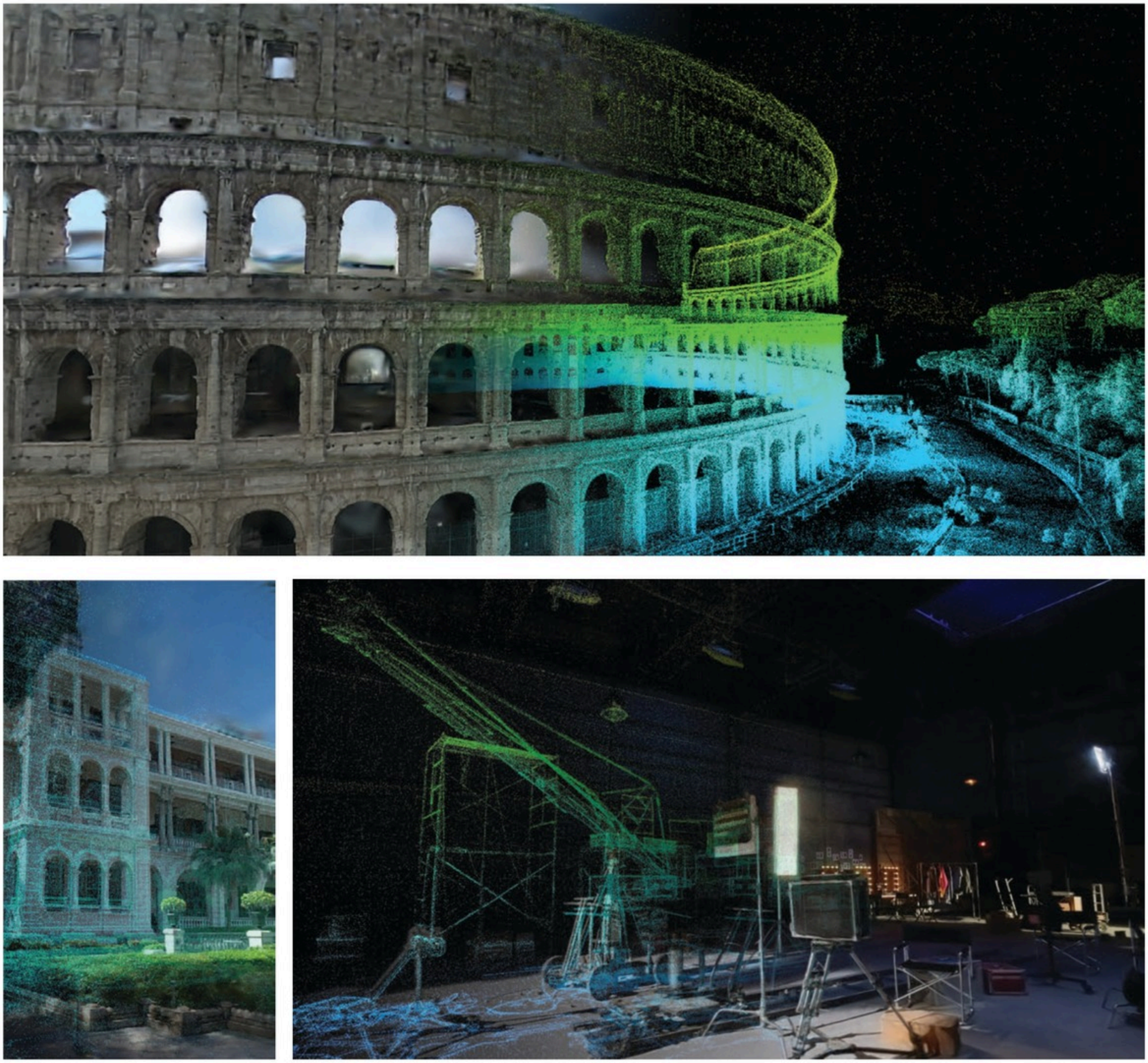
The Italian Job

Decades before the independent production took Schaefer to Sutri, he had worked at the location on a Belinda Carlisle music video, so he knew the narrow piazzas, ancient churches and winding alleyways would make it challenging to plan shots with traditional location-scouting methods. He recalls that his interest in incorporating Gaussian-splat technology into the project "started at NAB 2024, when I met the Lightcraft team and saw their Jetset visualization software — it's a mobile app that lets you quickly drop CG elements and environments into your footage for planning. I contacted [Lightcraft founder] Eliot Mack, who suggested I do a virtual location scout using the XGrids K1 to generate photorealistic environments via Gaussian splats for Jetset. The idea was that I, as the DP, should do my



This page and opposite: Roberto Schaefer, ASC, AIC performs a virtual location scout in Sutri, Italy to generate digital environments via Gaussian splats. Pictured on this page are a photorealistic rendering (middle) and a point-cloud rendering as viewed in the 3D-modeling app Blender (bottom).

IMAGES ON THIS PAGE AND OPPOSITE COURTESY OF ROBERTO SCHAEFER, ASC, AIC.



IMAGES COURTESY OF XGRIDS [[CONFIRMATION TK]].

Captured with XGrids scanners, these hybrid Gaussian-splat scans display elements of point-cloud and photoreal renderings.

own scans because I know what I'm looking for."

Armed with the K1, he methodically captured Sutri's piazzas and dropped them into Jetset to explore blocking, framing and lighting options. "The image quality worked nicely. I could then shoot previs shots with actors anywhere and, using Jetset, place them into the real location even without a greenscreen."

Getting Deeper Into Prep

For years, photogrammetry has been the go-to method for creating digital twins of sets and locations, and it demands hundreds or thousands of carefully bracketed photographs and long processing times. Lidar point clouds, by contrast, deliver precise geometry but little in the way of surface detail or photoreal qualities.

Gaussian splats bridge these limitations by combining the accuracy of laser-based

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measurement with the color and quality of still photography. The results are both faster to capture and more realistic. Schaefer notes that this balance allows cinematographers to "get deeper into your prep and take you through production," offering enough realism for virtual production while remaining flexible enough to be captured by a single operator.

Mark Read — creative technologist, strategic alliances at Hypercube, an XGrids reseller — brings his experiences to bear when discussing the utility of Gaussian splats. "When I first started doing lidar, we used a Cyrax scanner, which cost $180,000 to $250,000 and was about the size of a small oven on a tripod," he recalls. "Then you had to add cameras, tell the system where the cameras were, do point reduction and build polygons. There were lots of manual steps, and it took a whole team to process."

By contrast, he sees the XGrids scanner as far more straightforward and easier to learn. "The skill set I like to cite is a combination of knowing how to take a good selfie for Instagram — framing, distance, that kind of thing — but also [how to use] an airbrush or a can of spray paint. You don't want to move too quickly or you'll get skips, and you don't want to move too slowly or you'll get drips. You have to stay within a certain distance. A fluid, almost Steadicam-like motion really helps. Even the first time people try it, the results are amazing. In just five minutes, you can get a realistic rendition of a room."

Read notes that XGrids' new PortalCam is designed specifically for filmmakers to quickly convert locations and props into digital twins and realistic 3D environments for previs, virtual production and other applications.

> **"Gaussian splats offer a way of modernizing and accelerating prep so that when you get on set, you go in much more educated."**

"Inexpensive Insurance"

Schaefer notes that Gaussian-splat technology holds significant potential for the cinematographer. "They're good enough for both virtual production and post, as well as documenting how you lit a scene during production for later reference. You can go into a set or a real location and do your splat recording after a scene is shot and lit the way it was. And it's your actual background, lit the way you had it, and then you can match your lighting on the actor if you want to reuse the splat as a background plate for pickups."

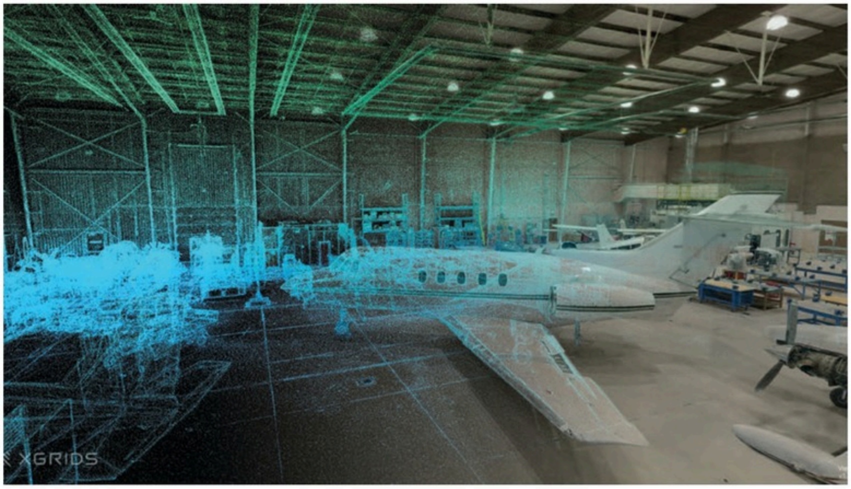
In a traditional production pipeline, location scouting often means multiple trips by different crewmembers followed by

separate photogrammetry sessions or VFX scans. Splats condense that process into a single, quick pass.

Splats' potential expands even further when combined with drone-based photography. By merging handheld scans with aerial data, cinematographers can build accurate digital twins of entire environments. For productions that demand complex VFX integration and/or LED-wall playback, Gaussian splats are an important addition to the cinematographer's toolkit.

Regarding the utility of Gaussian-splat technology for filmmakers on all manner of projects, Schaefer notes, "So many times, you have to go back and do a reshoot or add something, and you can't get back into a location or the sets are gone. I see this as inexpensive insurance. If I were a producer, I would be remiss not to do a full capture with a Gaussian splat at the highest quality and keep it on file, just in case."

Opposite and above (respectively): Point-cloud and photoreal renderings of a setting captured by the author. Below: A hybrid point-cloud/photo-real scan.



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Clubhouse News
Society Welcomes New Members

Valentina Caniglia, ASC

Max Da-Yung Wang, ASC

Mike Berlucchi, ASC

Valentina Caniglia, ASC
Caniglia was recently behind the camera on the feature *Jesus Land*, starring Juliette Lewis and based on the *New York Times* bestselling memoir by Julia Scheeres, for director Saila Kariat. She also served as director of photography on *3 Days Rising*, a horror-thriller starring Mickey Rourke; the supernatural-horror feature *Quail Hollow*; the docuseries *The Captain*, about baseball's Derek Jeter; and the Apple TV+ drama *Dear...*

Born in Naples, Italy, she embarked on her career in London and soon moved to the United States to study film production at New York University. Since graduating, she has worked around the world, with credits that include the Palestinian drama *Pomegranates and Myrrh*, for which she won the Golden Dagger at the Muskat Film Festival; the Italian drama *Isola*, which screened at the 2025 Cannes Marché du Film; the black-and-white feature *Adieu, Lacan*; and the documentary *The Last Supper: The Sopranos Session*.

Her commercial clients include British Airways, Nike and Ford, and her music-video credits include pieces for Aesop Rock, The Roots and Miss Peppermint.

Caniglia was selected for the ASC Vision Mentorship Program in 2019 and worked under the tutelage of Tom Houghton, ASC. She is the first Italian-born woman to become an ASC member.

Max Da-Yung Wang, ASC
Los Angeles-based cinematographer Wang was born in Taipei, Taiwan, and sparked to photography at the Chinese Cultural University, where he earned a bachelor's degree in graphic arts. While working as a fashion photographer, he began exploring cinematography by training as a camera assistant at a rental house.

Wang's passion for the craft led him to enroll in the cinematography program at the American Film Institute, and he began working his way up the ranks in the lighting department after earning his MFA. His cinematography credits include the Asian features *Ping Pong: The Triumph*; *Looking Up*; *Exit No. 6*; *Animal World*; and the anthology *My People, My Homeland;* he has also shot the U.S. features *The Girl from the Naked Eye* and *Boss'n Up*.

His commercial clients include L'Oréal, Red Bull, Mercedes-Benz and McDonald's, and he has shot music videos for Snoop Dogg and Lil Jon, among others.

Mike Berlucchi, ASC
Michigan native Berlucchi recalls a pivotal moment in his youth when his father, who designed camera rigs for crash tests at General

Top, from left: Shelly Johnson, ASC; Keslow's vice president of business development, Brad Wilson; Steve Gainer, ASC, ASK; Richard Edlund, ASC; and Christian Sprenger, ASC share a panel discussion following the unveiling of the ASC Todd-AO lenses. Bottom: Johnson, joined by Murray Milne, NZCS, delivers a presentation on VFX prep to New Zealand Cinematographers Society members and associates.

PHOTOS ON THIS PAGE AND PAGE 70 BY DANYAEL ALCARAZ.

Motors, came home with a box full of Nikon cameras and lenses and said, "Here you go!" GM was transitioning to digital, and the film gear had been tossed in the trash. Berlucchi was 13 at the time and had already shown an interest in photography, but that day, he recalls, "was when it really began."

Following work at a local rental house after completing high school, Berlucchi was swept into Local 38 and assigned to a $12 million feature as a best boy grip; on that production, he learned from a roster of gaffers and cinematographers, including ASC members Peter Deming, Phedon Papamichael and Matthew Libatique. He built a reel of music videos on the side, and in 2010, he moved to New York to pitch himself as a cinematographer.

He gained a foothold in the industry when a friend brought him onto Season 3 of the FXX series *You're the Worst*, and he shot the show for three years. The series *Teenage Bounty Hunters*, *Mythic Quest*, *Our Flag Means Death*, *Time Bandits* and *Interior Chinatown* followed.

Berlucchi won an ASC Award (shared with Marc Carter) for an episode of *Mythic Quest*, and he received an ASC Award nomination for *Interior Chinatown*. His first feature as a director of photography, Taika Waititi's *Klara and the Sun*, is scheduled for release next year.

Society Showcases ASC Todd-AO Lenses

On September 30, guests gathered at the Society's Clubhouse for the official unveiling of the ASC Todd-AO lenses.

Originally crafted for the revolutionary Todd-AO widescreen format of the 1950s, the lenses were reimagined for today's large-format workflows, and are now available for rental through Keslow Camera. "The restoration and refurbishing of these lenses, which was spearheaded by our own Shelly Johnson [ASC], reflects the ASC's commitment to preserving the tools that shaped our visual language," said Society President **Mandy Walker** in a statement. "By restoring the Todd-AO lenses, we're doing more than simply honoring cinematic history — we're empowering filmmakers to explore new creative frontiers with the soul of classic optics."

The unveiling event featured a discussion panel, moderated by Johnson and Brad Wilson of Keslow, that included insights from ASC members **Richard Edlund**, **Steve Gainer** and **Christian Sprenger** — the latter being the first to use the lenses, on the Apple TV Plus series *Widow's Bay* — and **Alex Nelson** of Zero Optik, who assisted in the refurbishing process.

For more information, visit theasc.com/news/asc-todd-ao-lenses-unveiled.

Johnson Speaks at NZCS Gathering

While shooting in Wellington, **Shelly Johnson, ASC** was invited to deliver a presentation to a gathering of New Zealand Cinematographers Society members and associates. The event, entitled "From Warships to Dinosaurs: VFX Prep with Shelly Johnson, ASC," took place on August 23 at Metro Film in Auckland.

"I spoke to the group about my experiences with prep on films such as *Greyhound*, *Jurassic Park III*, *The Wolfman* and *Percy Jackson: Sea of Monsters*," says Johnson of the two-hour discussion. "I very much enjoyed meeting our extended cinematographer family from New Zealand."

Red and ASC Celebrate Emmy Nominees

Red and the ASC hosted a festive celebration of the 77th Emmy nominees in categories for camerawork on September 4 at the Society's Clubhouse. The hundreds of guests in attendance included Emmy nominees; ASC members; associates and staff; cinematographer agents and guests; and representatives from Red, a Nikon company.

ASC associate member **Naida Albright**, Red's senior director of global strategic relations, welcomed guests and led several rounds of applause for the nominees. In her remarks, she congratulated the nominees on their outstanding work, and quoted the late Gordon Willis, ASC, saying, "Simplicity should not be confused with being simplistic. Simplistic is doing something badly. Simple is making thoughtful choices. A single light coming through a window can be beautiful. Simple is when you take a sophisticated idea and reduce it to the simplest possible terms.

"I'm sure many of you know this quote well, and several of you in

attendance knew Gordon personally," she continued. "I think that is what cinematography does at it's best. It engages the viewer without drawing attention to the craft. It serves the story. It's simple, and it's not."

Red also assembled a montage of the nominated cinematography, which played during the celebration. Guests mingled in the ASC's outdoor courtyard, and at Billy's Bar, where an Emmy-themed cocktail was served.

Sony-Sponsored ASC Mini Master Class Focuses on Composition, Framing

The ASC presented a "Mini Master Class" on composition and framing in partnership with Sony on Aug. 26-27 at the Society's Clubhouse.

On both mornings of the event, the class was given an introduction to the fundamentals of composition and framing, presented by **Michael Pessah, ASC**. His talk addressed composition and framing as a visual language to guide emotion, reveal character and pull an audience deeper into the story. Instructors also included Society members **Adam Bricker**, **Nicole Hirsch Whitaker** and **Gavin Kelly**.

Participants experimented in two ASC-crafted shooting environments with several cameras, including Sony's FX2 full-frame cinema camera. These setups included professional models under both cinematic and natural lighting; participants were afforded time to experiment with angles, movement and expressive techniques.

Left: Guests gather at the outdoor courtyard of the ASC Clubhouse for a Red-sponsored celebration of this year's Emmy-nominated cinematographers. Bottom: Instructor Nicole Hirsch Whitaker, ASC works with participants during a Sony-sponsored two-day Master Class held at the Clubhouse in August.

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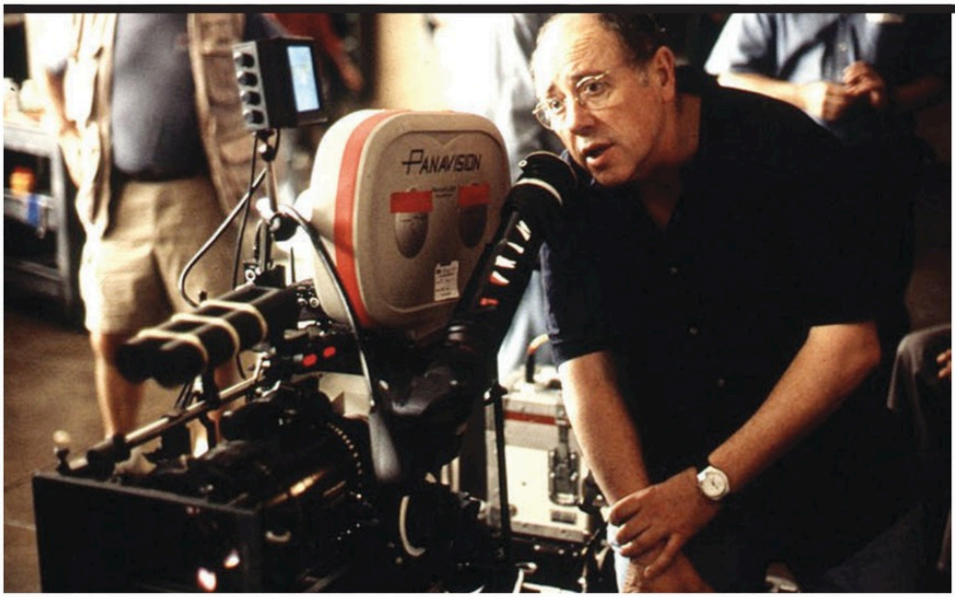
In Memoriam

Eduardo Serra, ASC, AFC (1943-2025)



Eduardo Serra, ASC, AFC, an Academy Award nominee for *Girl With a Pearl Earring* and *The Wings of the Dove* and the 2014 ASC International Award honoree, died Aug. 19 at the age of 81.

Always alert to the possibility of telling a resonant story regardless of its period, setting or source material, Serra embraced literary adaptations, historical and contemporary dramas, and CGI-heavy fantasies. Along the way, he also sought creative partnerships that struck a particular chord: "In cinema you have different families; I always chose to work with people who saw the relationships that way." Among his credits were Vincent Ward's *Map of the Human Heart* and *What Dreams May Come*, Michael Winterbottom's *Jude*, M. Night Shyamalan's *Unbreakable*, Edward Zwick's *Blood Diamond* and *Defiance*, David Yates' *Harry Potter and the Deathly Hallows* (Parts 1 and 2), and multiple features with both Patrice Leconte and Claude Chabrol. Serra's final film was Leconte's *A Promise*.

Born in Lisbon, Portugal, on Oct. 2, 1943, Serra left for France in 1963, when his activism against the authoritarian regime of António de Oliveira Salazar began posing a danger to his safety. Already a film enthusiast, he immediately fell in love with the cineaste culture of Paris, and over the next two years, he spent hours at the Cinémathèque. "I've probably seen about 95 percent of everything important made between 1895 and 1955," he told *AC*. He earned a degree at the Vaugirard (now the ENS Louis-Lumière), which trained cinematographers, and when job opportunities proved scarce following graduation, he enrolled at the Sorbonne and earned degrees in art history and archaeology. He gained a foothold in the industry as a loader for Pierre Lhomme, AFC, and subsequently worked on more than 30 productions as a 1st camera assistant. He started shooting French features in 1980, and Portuguese, Brazilian, German and English productions soon followed. He relished the peripatetic nature of his work: "Every change of country for a movie can be an enriching experience for any member of a cinema crew, even for technicians. I found I could adapt myself to different ways of working while maintaining the same direction in terms of my aesthetic choices."

Ward, the New Zealand filmmaker who tapped Serra to shoot the equally ambitious but very different love stories *Map of the Human Heart* and *What Dreams May Come*, told *AC*, "Eduardo is very methodical and particular about light. He can create what I call 'exotic experiences,' particularly in smaller environments."

Peter Webber's *Girl With a Pearl Earring*, which imagined Vermeer's creation of the famous work, was a career apex, offering Serra a singular opportunity to suffuse an entire picture in the soft yet contrasty light he once described as a decades-long "obsession." Accepting the European Film Award for his work on the picture, he noted, "A film like this, where light is one of the main characters, is a gift for any cinematographer."

Serra took up residence in England for two years to shoot both installments of the final *Harry Potter* film back-to-back for Yates. "I think Eduardo's real gift is that he can light a scene incredibly naturalistically and believably, and yet it can still have this wonderful, painterly quality to it," Yates told *AC*. Serra noted with some amusement that over the course of the shoot, "sometimes I would look around on set at all these thousands of people and wonder, 'How did I come to be here?'" But he also rooted the experience in the familiar: "I was fortunate to have a wonderful gaffer in Chuck Finch. The first time I worked in England [on *Funny Bones*] he was on it, and he helped me a great deal, so it was very good to work with him again."

Serra became an ASC member in 2002 after being proposed by Robert Primes, Darius Khondji and Steven B. Poster. In addition to active membership in the AFC, he was an honorary member of the Associação de Imagem Portuguesa (AIP).

Speaking to Peter Ettedgui for the book *Cinematography: Screencraft*, Serra said, "Two principles inform everything I do. The first is, always question the rules which are presented to you. Some are good; others aren't (although they may have been at some earlier stage in the evolution of film technology). Secondly, never accept to become involved in any project that you suspect you may be ashamed of. Whatever you choose to do, you must do your best; so, if you don't think a project deserves your best — all your commitment and talent and energy — then avoid it."

— Rachael K. Bosley

Wrap Shot

Casino Royale (2006)

IMAGES COURTESY OF SONY PICTURES.

Cinema history is filled with memorable gambling sequences, and the James Bond series is famous for them. Some of the best were shot by the late Phil Méheux, BSC for *Casino Royale*, the 2006 Bond reboot directed by Martin Campbell, who had previously helmed *GoldenEye* in 1995.

True to the spirit of Ian Fleming's source novel, a lot of the drama in *Casino Royale* takes place at the card tables, where a form of Texas Hold'em poker has replaced the more Continental game of baccarat, as played in the book. Bond (Daniel Craig, making his debut as 007) is pitted against the nefarious Le Chiffre (Mads Mikkelsen), a private banker and card sharp who finances international terrorism.

One of Méheux's challenges was finding cinematic ways to cover these scenes. As Campbell told writer Jon Silberg in *AC*'s December 2006 coverage of the film, "There are three card games in the film. How do you make 10 people around a table playing cards interesting? We had to discuss it quite a bit, but I must say Phil made it wonderful."

Méheux offered, "Betting in itself is pretty boring. The audience isn't necessarily going to know the game, so if Bond says, 'I'll raise you,' and they turn over the next card, how many people in the audience will know if it's a good card or a bad card? So, you have to deal with the drama between the characters. It's all about looks, so you never really want to be too wide, but you also don't want just a bunch of close-ups. We had a whole day of rehearsal with all the actors playing their cards and running dialogue, and then we worked out where best to seat everyone and how to shoot it. We tried to approach it with as many variations as we could within those limitations. We did one card game that was all filmed with a static camera, and we did another where the camera was constantly moving around the table. Then we did one game where the camera starts pretty far back and slowly closes in on Bond and Le Chiffre."

In a 2023 interview with *GQ*, Mikkelsen noted that he'd played poker since he was a kid, so it was "not new to me," but added, "The hands we are playing are insane, so if you're a poker player, you'll go, 'What?' We just wanted to make the nature of the betting believable, but the hands obviously had to be easily recognizable for an audience that doesn't play poker, so they were quite crazy hands."

Top: James Bond (Daniel Craig, left) has a poker showdown with Le Chiffre (Mads Mikkelsen). Above: Cinematographer Phil Méheux, BSC goes all in.

And while 007 is legendary for his gambling prowess, Mikkelsen was not impressed with Craig's card-playing abilities. In the *GQ* interview, he scoffed, "Everybody knew how to play poker around that table except for one: Daniel. He had no clue. He sucked. And it was the worst thing ever that he, of all people, had to beat [my character] and win all my money. It was like, 'This is wrong.'"

Mikkelsen did get a measure of payback with the movie's excruciating torture scene, in which Bond is stripped naked, tied to a chair, and nearly crippled when Le Chiffre beats 007's private parts with the knotted end of a ship's lanyard. "I got him back with the rope," Mikkelsen said with a wry smile, "so that's good."

— Stephen Pizzello

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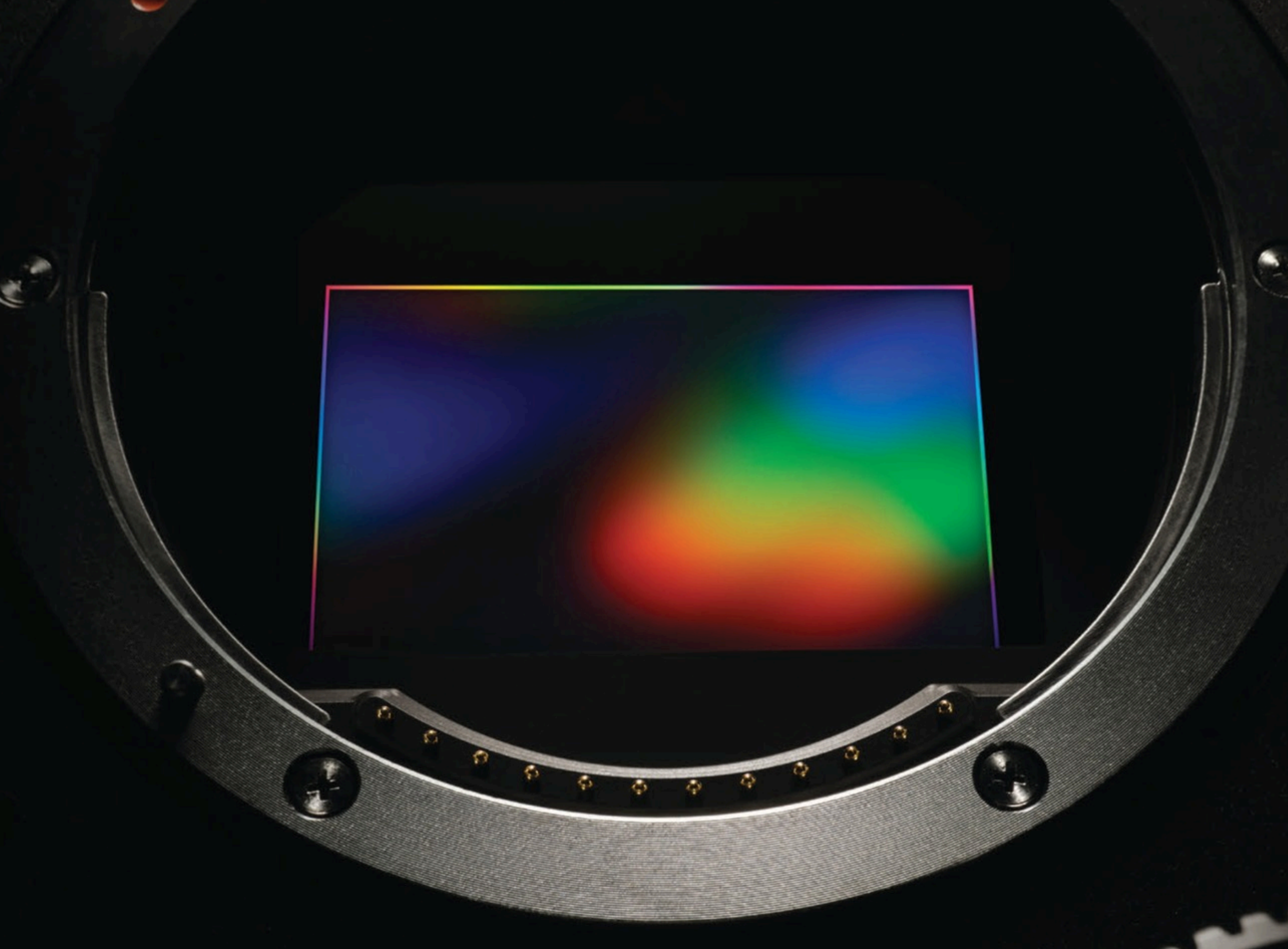

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